



Shasta County

DEPARTMENT OF RESOURCE MANAGEMENT
1855 Placer Street, Redding, CA 96001

Russ Mull, R.E.H.S., AICP
Director
Richard W. Simon, AICP
Assistant Director

RECEIVED

OCT 19 2012

October 15, 2012

Gerardo Rios
United States Environmental
Protection Agency, A-5-2
Air and Toxics Division
75 Hawthorne Street
San Francisco, CA 94105

Permits Office Air-3
U.S. EPA, Region 9

NOTIFICATION OF TITLE V APPLICATION COMPLETENESS FOR ANDERSON LANDFILL INC.

Dear Mr. Rios:

As required by the Shasta County Air Pollution Control District Rule V, "Additional Procedures for Issuing the Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990," Section V.B, the District hereby gives notice that the Title V application for Anderson Landfill Inc. was deemed administratively complete on October 12, 2012.

Enclosed is a copy of the Stationary Source (Title V application forms A-1 and A-2) as submitted with this application.

If you have any questions concerning this matter, please contact Lindsey Watt at 530/225-5674.

Sincerely,

A handwritten signature in black ink that reads "Ross Bell".

Ross Bell
Air Quality District Manager

RB/dd

c: Mike Tollstrup, Chief, Project Assessment Branch, SSD, CARB, PO Box 2815,
Sacramento 95812-2815
Mike Rivera, Anderson Landfill Inc. 18703 Cambridge Rd. Anderson, CA 96007

Enclosures

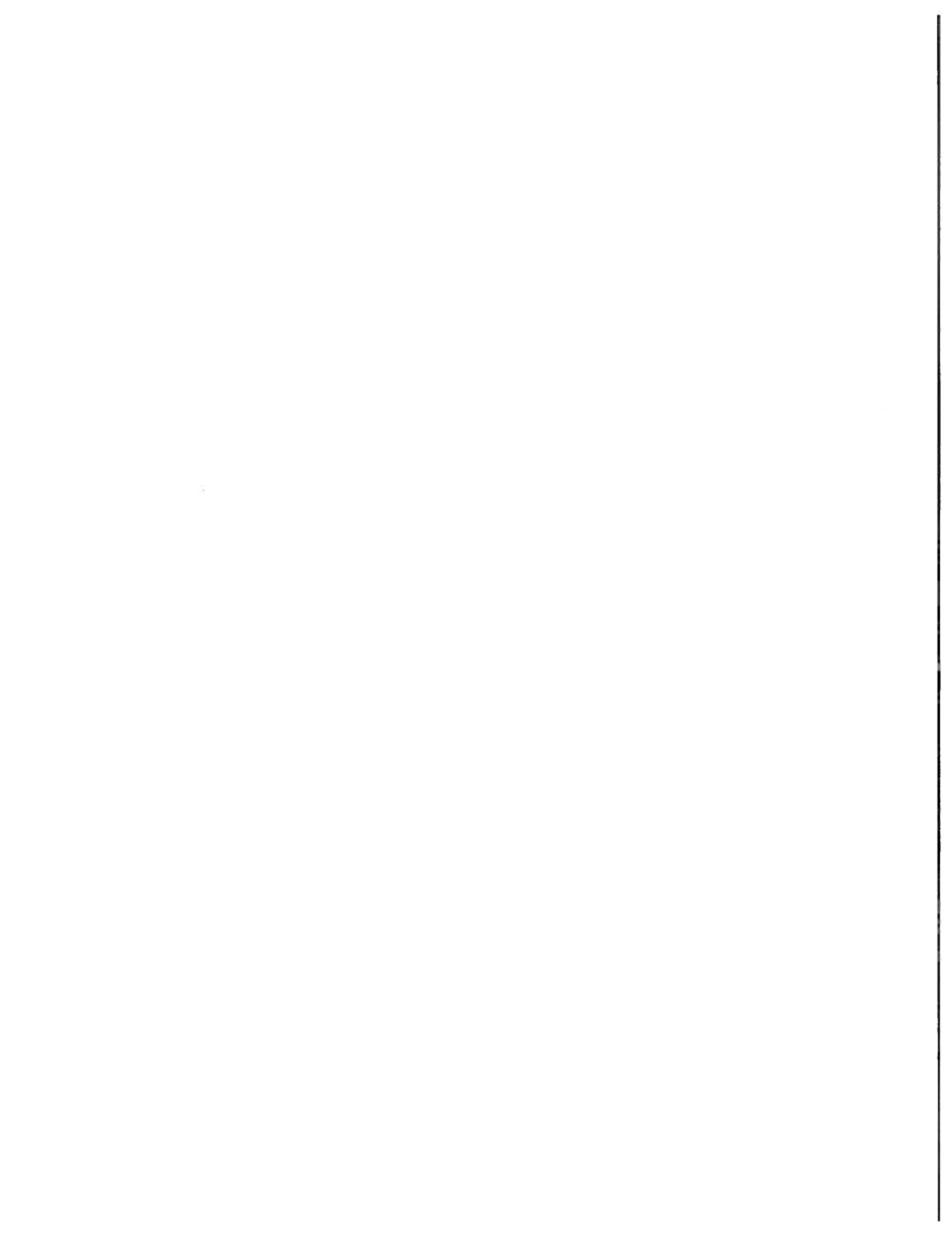
Suite 101
AIR QUALITY MANAGEMENT DISTRICT
(530) 225-5674
(530) 225-5237

Suite 102
BUILDING DIVISION
(530) 225-5761
FAX (530) 245-6468

Suite 103
PLANNING DIVISION
(530) 225-5532
FAX (530) 245-6468

Suite 201
ENVIRONMENTAL HEALTH
(530) 225-5787
FAX (530) 225-5413

Suite 200
ADMINISTRATION & COMMUNITY EDUCATION
(530) 225-5789
FAX (530)-225-5807





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SEP 14 2012
SHASTA COUNTY AQMD

ANDERSON LANDFILL
18703 Cambridge Road
Anderson, CA 96007
(530) 347-5236
(530) 347-7056 Fax

September 14, 2012

Mr. Russ Mull, Air Pollution Officer
Shasta County Air Quality Management District
1855 Placer Street, Suite 101
Redding, CA 96001

U.S. EPA Region 9
Air Division (AIR-3)
75 Hawthorne Street
San Francisco, CA 94105-3901

RE: Title V Permit Renewal
Operating Permit No. 91-VP-35e
Anderson Landfill Inc., Anderson, CA

Dear Mr. Mull,

Anderson Landfill Inc., (ALI) would like to submit the attached Title V Renewal Application Packet dated September 13, 2012. ALI is operating the current Title V Operating Permit, Permit number 91-VP-35e, which expires March 17, 2013.

If you have any questions or need additional information, please do not hesitate to contact me at (530) 347-5226.

Sincerely,

Anderson Landfill, Inc.

Mike Rivera
District Manager

cc: Christian Colline, WM Director of Air Programs

TITLE V OPERATING PERMIT UPDATE APPLICATION

ANDERSON SOLID WASTE LANDFILL

ANDERSON, CALIFORNIA

RECEIVED

SEP 14 2012

SHASTA COUNTY AQMD

by

Anderson Landfill, Inc.

September 13, 2012

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1 INTRODUCTION

Anderson Landfill, Inc. (ALI) is currently operating under Title V Operating Permit 91-VP-35e issued on May 16, 2008. ALI is submitting a Title V Operating Permit Renewal Application to the SCAQMD for its Anderson Landfill, located at 18703 Cambridge Road, Anderson, California. No significant changes have occurred since the last permit was issued.

ALI would like to request a modification to Permit Condition C23. ALI would like to suggest the language be modified to exclude limit of the amount of commissioned, decommissioned, and replacement wells during the life of this permit. ALI would like to suggest that prior to any well being commissioned, decommissioned, or replaced that a notification letter be submitted to the APCO for approval.

Key contacts are as follows:

Responsible Official and Site Contact

Mr. Mike Rivera
District Manager
Anderson Landfill, Inc.
18703 Cambridge Road
Anderson, CA
(530) 347-5236 (tel)

2 FACILITY DESCRIPTION AND EMISSIONS

The Anderson Landfill is located at 18703 Cambridge Road in Anderson, California, and has been owned and operated by Anderson Landfill Inc. (ALI) as a subsidiary of USA Waste of California, Inc. (WM) since 1999. The Landfill is designated as a Class III facility. The landfill is permitted by SCAQMD to accept only non-hazardous wastes including household and commercial wastes, construction/demolition debris, contaminated soils, incinerator ash, and wastewater treatment plant sludges.

The Landfill property consists of 246 acres with 130 acres (Units 1 through 5) permitted for waste disposal. Currently, approximately 51.3 acres contain waste. The Landfill currently accepts MSW from Northern California. Prior to 1990, the Landfill accepted only wood chips, bark, log-deck scraping, and other timber related wastes. These wastes were placed in Unit 1. After 1990 the landfill began accepting asbestos and titanium dioxide wastes in Unit 2A and MSW in Unit 1. In 2001, Unit 2Ba was lined (over Unit 2B) with an approved engineered alternative to a Subtitle D liner. Unit 2Ba began accepting MSW in 2002. Unit 3 (15.85 acres) was never constructed and is not authorized for waste disposal activities. In 2003, construction of the South Canyon Unit started and was completed in the spring of 2004. Unit 4A was constructed in 2005 and was completed in 2006. Unit 4B was constructed in 2007 and was completed in 2008. Unit 4C was constructed in 2009 and is currently accepting waste.

Refuse Hauling, Handling, and Placement

ALI is permitted to accept MSW and residual waste from approved generators located around Northern California. ALI also accepts municipal waste from local Counties and Municipalities. Vehicles are weighed in and directed to the working disposal cell. Waste is discharged from the vehicle, spread over the area and compacted in place. All waste is covered at the end of the working day with either approved alternative daily cover or earthen materials. Disposal of waste is anticipated to continue through 2067: When all disposal areas have reached capacity, the landfill will be permanently closed using an approved liner system..

Activities related to the construction and modification of the landfill includes preparation of the waste storage area, placement and disposal of waste, transportation and handling of cover material, and installation of landfill cover. Hauling activities include the operation

of waste-hauling trucks on the haul roads of the site. Each of these activities results in potential fugitive emissions of road dust.

Landfill Gas (LFG) Generation and Extraction

Decomposing waste encapsulated within the landfill produces a gas that is primarily composed of methane and carbon dioxide with other trace gases. A gas collection and control system (GCCS) collects the LFG via a network of perforated and solid piping. The network of extraction wells and piping provides the capability of inducing negative pressure within the waste mass. Removal of the gas helps to protect the integrity of the landfill cover by controlling the pressure generated from gas production and reducing stress on the cover. Gas condensate collected by this system, along with landfill leachate is stored in leachate collection ponds. Periodically, condensate from the GCCS is sent to be burned off in the flare. Condensate flow and contribution to emissions is considered minimal.

The GCCS provides a method of control for the gas generated within the waste mass. As the waste mass grows, the capacity of the GCCS will also be increased through the installation of new wells. Operation of the LFG extraction system and the following combustion system is continuous. LFG that is not collectable via the GCCS is considered fugitive emissions.

LFG Control

Once the gas is collected, control is accomplished through the use of a LFG flare system. The gas flare system consists of a 45 million British Thermal Units per hour (MMBtu/hr) [~1,500 standard cubic feet per minute (scfm)] enclosed LFG flare.

LFG Composition

LFG combustion system at the ALI uses the MSW landfill as a source of process material and combustion fuel. The gas recovery system, therefore, may simultaneously be considered as an air pollution control device or fuel combustion emission unit. As a result, ALI believes that the LFG may be simultaneously considered as a raw material and a fuel. This definition is essential for the purpose of establishing whether the LFG flare system qualifies as an emitter of pollutants listed as hazardous pursuant to §112(b) of the Federal Clean Air Act (HAPs).

For the purpose of calculating the products of combustion and the exhaust gas flowrate, the inlet LFG may have a mixture of approximately 50-55 percent methane (CH_4), 40 percent carbon dioxide (CO_2), 9 percent nitrogen (N_2), and 1 percent oxygen (O_2). Concentrations of other LFG constituents are negligible with regards to the combustion

process. Nitrogen and oxygen presence in the LFG is assumed to account for the possible infiltration of ambient air into the gas extraction system through the surface of the landfill.

Trace LFG constituents make up less than 1 percent of the total gas volume

Potential emissions are calculated using the US EPA LANDGEM - Landfill Gas Emissions Model, Version 3.02 (LANDGEM). Output from the LANDGEM Run for Anderson LFG generation, as well as other compound generation estimations, are provided in Appendix B. Emissions of volatile organic compounds (VOC) and hazardous air pollutants (HAP) from the LFG not collected by the GCCS, as well as potential emission from the enclosed LFG flare, are summarized below and presented in detail in the emission spreadsheets in Appendix C.

Insignificant and exempt sources are those sources that do not have any regulatory requirements and are of such a size as to be categorized as insignificant. SCAQMD Rule V – Title V, Attachment 1 – List of Title V Insignificant Activities provides these exemptions and insignificance levels. The landfill's "exempt" (i.e., exempt from any applicable regulations or Title V permitting requirements) or insignificant sources are the following, along with the Rule V citation for insignificance:

- One (1) above-ground 10,000 gallon storage tank containing diesel fuel (Section B.7.c)
- Three (3) above ground 550 gallon storage tanks containing gasoline, hydraulic oil, and motor oil (Section B.7.b and c)
- One (1) above ground 350 gallon storage tanks containing used oil (Section B.7.b)
- Five (5) portable emergency gasoline/diesel generators/welders (23, 9, 5.5 horsepower/5.5 and 6.5 kilowatts, less than 200 hours operation per year) (Section B.2.b and c)
- Three (3) portable diesel/gasoline water pumps (33, 11, 8 horsepower, less than 200 hours operation per year) (Section B.2.b and c)
- Two (2) portable gasoline compressors (13, 11 horsepower, less than 200 hours operation per year) (Section B.2.b and c)
- One (1) electric welders
- One (1) portable pressure washer with a 13 horsepower motor (Section B.2.b and c)

In addition to the above exempt and insignificant sources, there are two (2) additional source that are considered significant, and therefore, Emission Units. They are:

- One (1) portable non-road diesel water pump (93 horsepower, less than 200 hours operation per year) – Did not operate in 2011.
- One (1) portable non-road Tipper Engine (130 horsepower, 6 hours operation per day)

These two source are considered Significant because they have engines greater than 50 horsepower (Rule V – Title V, Attachment 1 – List of Title V Insignificant Activities, Section B.2.b).

Table 2-1
Total Emissions from the Anderson Landfill Facility

Pollutant	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10*	3.7	30.9
CO	67.2	30.7
NO _x	22.4	7.8
SO ₂	4.9	1.70
VOC	8.6	2.4
NMOC	20.4	5.4
HAPs	10.6	4.1
TOTAL:	137.8	83.0

*Note: The total actual emissions of PM-10 include fugitive emissions from the MSW Landfill operations. Fugitive emissions are not required to be included in potential emissions which are used to determine applicability to the Title V program.

3 APPLICABLE REQUIREMENTS

3.1 Federal Requirements

The following is a brief description of the federal requirements applicable to Anderson Landfill.

3.1.1 Standards of Performance for New Stationary Sources (NSPS)

3.1.1.1 NSPS – Emission Guidelines and Compliance Times for MSW Landfills (EG) (40 CFR 60, Subpart Cc

The Landfill is currently considered an "existing" or "EG" landfill under NSPS because it began accepting waste prior to May 30, 1991. A Tier 1 emission rate estimate of 156 Mg/year for the year 2002 exceeded the 50 Mg/year NMOC emission rate for design and installation of a GCCS, triggering the compliance schedule requiring a GCCS design plan submittal, which was submitted on March 16, 2006. GCCS has been installed and began operation in December 2006.

3.1.1.2 NSPS – Stationary Compression Ignition Internal Combustion Engines (40 CFR 60, Subpart III)

This subpart applies to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE). For the purposes of this subpart, 'stationary ICE' means any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle, aircraft, or a vehicle used solely for competition. Stationary ICE include reciprocating ICE, rotary ICE, and other ICE, except combustion turbines. Although SCAQMD regulates the tipper and water pump as a stationary source, for permitting purposes these ICEs are considered nonroad engines and therefore are not subject to this subpart.

3.1.1.3 NSPS – Stationary Spark Ignition Internal Combustion Engines (40 CFR 60, Subpart JJJJ)

This subpart applies to manufacturers, owners, and operators of stationary spark ignition (SI) ICEs. ALI does not operate any stationary SI ICEs and is not subject to this subpart.

3.1.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

3.1.2.1 NESHAP – Asbestos (40 CFR 61, Subpart M)

Although ALI does not currently accept asbestos waste, it has accepted asbestos waste in the past.

ALI maintains records required by 40 CFR 61 of the location of the placed asbestos and follows all required procedures if the placed asbestos could be disturbed.

If ALI accepts asbestos in the future, it will follow all required signage, placement procedures and documentation requirements of 40 CFR 61, Subpart M.

3.1.2.2 NESHAP – Municipal Solid Waste Landfills (40 CFR 63, Subpart AAAA)

This subpart establishes national emission standards for hazardous air pollutants for existing and new municipal solid waste (MSW) landfills. This subpart requires all landfills described in §63.1935 to meet the requirements of 40 CFR part 60, Subpart WWW and requires timely control of bioreactors. This subpart also requires such landfills to meet the startup, shutdown, and malfunction (SSM) requirements of the general provisions of this part and provides that compliance with the operating conditions shall be demonstrated by parameter monitoring results that are within the specified ranges. It also includes additional reporting requirements.

ALI has developed and implemented the required SSM Plan. In addition, it will develop and submit the required semi-annual reports.

3.1.2.3 NESHAP - Stationary Reciprocating Internal Combustion Engines (RICE) (40 CFR 63, Subpart ZZZZ)

This subpart establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. ALI does not operate any stationary RICE and is therefore not subject to this subpart.

3.1.2.4 NESHAP – Gasoline Dispensing Facilities (40 CFR 63, Subpart CCCCCC)

This subpart establishes national emission limitations and management practices for HAPs emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices. ALI's GDF has a monthly throughput of

less than 10,000 gallons and is therefore subject to §63.11116. This rule requires ALI to minimize vapor releases to the atmosphere through the minimization of spills, expeditious cleanup of spills, use of proper containers, recordkeeping that can be used to demonstrate that throughput is less than 10,000 gallons per month.

3.1.3 Title V

Operating Permits Program

40 CFR Part 70 establishes the minimum requirements for state operating permit programs. Landfills subject to NSPS are subject to Title V.

3.1.4 40 CFR Part 82 – Protection of Stratospheric Ozone

Under EPA's rule, equipment that is typically dismantled on-site before disposal (e.g., retail food refrigeration, central residential air conditioning, chillers, and industrial process refrigeration) had to have the refrigerant recovered in accordance with EPAs requirements for servicing. However, equipment that typically enters the waste stream with the charge intact (e.g., motor vehicle air conditioners, household refrigerators and freezers, and room air conditioners) is subject to special safe disposal requirements.

Under these requirements, the final person in the disposal chain (e.g., a scrap metal recycler or landfill owner) is responsible for ensuring that refrigerant is recovered from equipment before the final disposal of the equipment. However, persons "upstream" can remove the refrigerant and provide documentation of its removal to the final person if this is more cost-effective.

ALI does not accept appliances for disposal into the landfill. Appliances are collected in bins located on site for shipment to a certified recycler. ALI does not conduct recovery of any refrigerants on-site.

Greenhouse Gases (GHG)

LFG-derived emissions of carbon dioxide (CO₂) are considered biogenic, meaning they come from a biofuel and do not contribute to a net increase in atmospheric CO₂. On July 1, 2011, the United States Environmental Protection Agency (USEPA) issued a rule (Federal Register volume 76, number 139, pages 43490 to 43508) to defer the inclusion of biogenic carbon dioxide from PSD and Title V programs under the Tailoring Rule.

Methane (CH₄) and nitrous oxide (N₂O) are combustion byproducts and are GHGs. Even when resulting from the combustion of a biofuel, methane and nitrous oxide are considered anthropogenic. These anthropogenic emissions continue to be included in the Title V and Prevention of Significant Deterioration (PSD) programs despite the proposed deferral of carbon dioxide emissions from a biogenic source.

All GHG from combustion of fossil fuels, such as diesel, are anthropogenic and must be included in the GHG emissions for Title V and PSD evaluation.

The landfill itself is a source of fugitive CH₄. The fugitive CH₄ is not regulated under federal or SCAQMD PSD rules, but is included here for Title V reporting purposes only.

The sources at the site are the flare and the landfill surface. The flare is permitted to operate at a capacity of 45 million British thermal units (MMBtu) per hour. The landfill surface is expected to have a maximum methane generation rate of 11,110 short tons of methane in 2010. Seventy-five (75) percent of the generated methane was assumed to be captured and destroyed in the flare, and 10 percent was assumed to be oxidized in the landfill surface.

GHG emissions were calculated using emission factors obtained from 40 CFR Part 98 (Federal Mandatory Reporting Rule [MRR]) Tables C-1 and C-2, except the carbon dioxide emission factor for LFG, which was obtained from Title 17 Code of California Regulations (CCR) Subchapter 10, Appendix A. The MRR was not used as the source for the LFG emission factor because the emission factor for LFG listed in the MRR only includes the CO₂ resulting from combustion and does not include CO₂ occurring in the LFG which passes through the combustion device without being combusted. GHG emission factors are shown in Table 3-1.

Table 3-1

GHG Emission Factors

Fuel	Emission Factors (kg/MMBtu)		
	CO ₂	CH ₄	N ₂ O
LFG	104.06	3.2E-03	6.3E-04

Table 3-2 shows a summary of which GHG emissions are anthropogenic, biogenic, fugitive, and regulated by source and gas under Title V and PSD programs. Currently permitted GHG sources and their emissions are shown in Tables 3-3 through 3-5. Biogenic unregulated emissions are shown in Table 3-3. Anthropogenic emissions are shown in Table 3-4. Regulated GHG emissions are shown in Table 3-5. CH₄ and N₂O have greater impact as GHG than CO₂; therefore, GHG emissions are converted to CO₂ equivalent (CO₂e) emissions when expressing the total emissions.

Table 3-2

GHG Types

Anthropogenic	Biogenic	Fugitive	Unregulated	Regulated
Landfill Surface CH ₄ Flare CH ₄ N ₂ O	Landfill Surface CO ₂ Flare CO ₂	Landfill Surface CO ₂ CH ₄	Landfill Surface CO ₂ CH ₄ Flare CO ₂	Flare CH ₄ N ₂ O

Table 3-3**Biogenic GHG PTE**

Source	Flare	Landfill Surface
Activity Rate	45 MMBtu/hr	Not applicable
Emissions (short tons)	CO ₂	45,760
	CH ₄	0
	N ₂ O	0
Source Biogenic GHG Emissions (short ton CO ₂ e)	45,760	8,658
Total Biogenic GHG Emissions (short ton CO ₂ e)		54,418

Table 3-4**Anthropogenic GHG PTE**

Source	Flare	Landfill Surface
Activity Rate	45 MMBtu/hr	Not applicable
Emissions (short tons)	CO ₂	0
	CH ₄	1.41
	N ₂ O	0.28
Source Anthropogenic GHG Emissions (short ton CO ₂ e)	115.43	71,288
Total Anthropogenic GHG Emissions (short ton CO ₂ e)		71,403

Table 3-5
Regulated Anthropogenic Non-Fugitive GHG PTE

Source		Flare	Landfill Surface
Activity Rate		45 MMBtu/hr	Not applicable
Emissions (short tons)	CO ₂	0	0
	CH ₄	1.41	0
	N ₂ O	0.28	0
Source Regulated GHG Emissions (short ton CO ₂ e)		115.43	0
Total Regulated GHG Emissions (short ton CO ₂ e)			115.43

The Project does not propose to increase the fuel flow to any sources or any change that would result in a different emission factor; therefore, there will be no increase in regulated GHG emissions from the Project. As such, PSD review is not required, and the facility is an existing minor source of GHGs.

3.2 State Requirements

Regulations for which an applicability determination is not included in this section are either not applicable to this facility or are considered administrative in nature. Table 3-1 provides a complete list of the Rules and Regulations of the SCAQMD. Below are the state requirements applicable to ALI.

3.2.1 RULE 3:2 – SPECIFIC AIR CONTAMINANTS

No person shall discharge contaminants from any single source into the atmosphere in amounts greater than those designated in **Table 1** of Rule 3:2 (provided below).

All emissions are to be measured by methods approved for use by the Air Pollution Control Officer (APCO). Any method approved by the EPA and/or the California Air Resources Board (CARB) is approved for use by the APCO.

Pollutant	Maximum Emission From Any Source*	
	Constructed or Modified after 7-1-86	Existing Before 7-1-86
Particulate Matter		
a. Combustion Particulate Matter ^{1,2}	0.10 gr/dscf	0.15 gr/dscf
b. Particulate Matter Less Than or Equal to 10μ in Size ^{1,2}	0.05 gr/dscf	0.10 gr/dscf
c. All Other Particulate Matter ^{1,2}	0.15 gr/dscf	0.15 gr/dscf
Process Weight: Particulate Matter Maximum Hourly Emissions (E) as a Function of Process Weight (P_t) in Tons Per Hour	$E = \text{lbs/hr}$	$E = \text{lbs/hr}$
a. Less Than or Equal to 30 Tons/Hour	$E = 4.1 P_t^{.67}$	$E = 4.1 P_t^{.67}$
b. Greater Than 30 Tons/Hour	$E = 55 P_t^{.11} - 40$	$E = 55 P_t^{.11} - 40$
Oxides of Sulfur (as SO _x) ^{1,2,3}	200 ppm	300 ppm
Oxides of Nitrogen (as NO _x) ^{1,2,3}		
a. Solid, Liquid Fuels	300 ppm	400 ppm
b. Gaseous Fuels, All Other Processes	250 ppm	250 ppm
Total Reduced Sulfur	see Table 1-1	see Table 1-1
Opacity	Ringelmann #2 and/or 40% equivalent opacity pursuant to CHSC Section 41701	Ringelmann #2 and/or 40% equivalent opacity pursuant to CHSC Section 41701

* Unless governed by EPA New Source Standards

¹Calculated at standard conditions: 70°F, one atmosphere, dry gas basis.

²When the emissions are generated by a combustion process, the gas volume shall be corrected to 12% CO₂ at standard temperature and pressure.

³The Air Pollution Control Officer may specify an appropriate correction and/or reporting factor depending upon the type of process involved.

3.2.2 RULE 3:29 - MUNICIPAL SOLID WASTE LANDFILLS

The purpose of this rule is to limit NMOC emissions from MSW landfills by implementing the provisions of Title 40 CFR Part 60, Subpart Cc-Emission Guidelines and Compliance Times for MSW Landfills.

This rule applies to all MSW landfills meeting the following conditions:

- a. construction, reconstruction or modification was commenced before May 30, 1991; and
- b. the MSW landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition.

4 APPLICATION FORMS

This section contains the Title V Permit application forms for the landfill.

STATIONARY SOURCE SUMMARY (FORM 5-A1)

DISTRICT: Shasta County Air Quality Management District

COMPANY NAME: Anderson Landfill, Inc.

► DISTRICT USE ONLY ◀

District ID:

Application #:

Application Received:

Application Filing Fee:

Application Deemed Complete:

I. FACILITY IDENTIFICATION

1. Facility Name: Anderson Landfill, Inc.
2. Four digit SIC Code: 4953 EPA Plant ID:
3. Parent Company (if different than Facility Name): USA Waste of California, Inc.
4. Mailing Address: 18703 Cambridge Road, Anderson, CA 96007
5. Street Address or Source Location: 18703 Cambridge Road, Anderson, CA 96007
6. UTM Coordinates (if required): UTM Zone 10; Northing – 4481755 m.; Easting 538795 m.
7. Source located within:

50 miles of the state line	[] Yes	[X] No
50 miles of a Native American Nation	[] Yes	[X] No
	[] Not Applicable	
8. Type of Organization: Corporation Sole Ownership Government Partnership Utility Company
9. Legal Owner's Name: USA Waste of California, Inc.
10. Owner's Agent Name (if any):
11. Responsible Official: Mr. Mike Rivera
12. Plant Site Manager/Contact: Mr. Mike Rivera Telephone #: (530) 347- 5236
13. Type of facility: Municipal Solid Waste Landfill
14. General description of processes/products: Accept and Dispose of Municipal Solid Waste
15. Does your facility store, or otherwise handle, greater than threshold quantities of any substance on the Section 112(r) List of Substances and their Thresholds (see attachment A)? Yes No
16. Is a Federal Risk Management Plan [pursuant to Section 112(r)] required? Not Applicable Yes No
(If yes, attach verification that Risk Management Plan is registered with appropriate agency or description of status of Risk Management Plan submittal.)

STATIONARY SOURCE SUMMARY (FORM 5-A2)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◀ DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc.	FACILITY NAME: Anderson Landfill

II. TYPE OF PERMIT ACTION

	CURRENT PERMIT (permit number)	EXPIRATION (date)
<input type="checkbox"/> Initial Title V Application		
<input checked="" type="checkbox"/> Permit Renewal	91-VP-35e	March 17, 2013
<input type="checkbox"/> Significant Permit Modification		
<input type="checkbox"/> Minor Permit Modification		
<input type="checkbox"/> Administrative Amendment		

III. DESCRIPTION OF PERMIT ACTION

1. Does the permit action requested involve:
 - a: Portable Source Voluntary Emissions Caps
 - Acid Rain Source Alternative Operating Scenarios
 - Source Subject to MACT Requirements [Section 112]
 - b: None of the options in 1.a. are applicable
 2. Is source operating under Compliance Schedule? Yes No
 3. For permit modifications, provide a general description of the proposed permit modification:

Anderson Landfill would like to propose a modification to section C-23 of the current permit conditions. C-23 currently allows the commissioning of up to ten (10) well, the decommissioning of up to ten (10) wells, and the replacement of up to five (5) wells on an "as needed" basis with the proper letter notification to the APCO.

ALI would like to propose that this section be modified to include; prior to commissioning, decommissioning, or replacing any wells, ALI will submit a notification letter to the APCO for approval.

TOTAL STATIONARY SOURCE EMISSIONS (FORM 5-B)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◀
DISTRICT ID:	
COMPANY NAME: Anderson Landfill, Inc.	FACILITY NAME: Anderson Landfill

I. TOTAL STATIONARY SOURCE EMISSIONS

Provide a brief description of operating scenario :

POLLUTANT* (name)	EMISSIONS (tons per year)	PRE-MODIFICATION EMISSIONS (tons per year)	EMISSIONS CHANGE (tons per year)
PM-10	3.7		
CO	67.2		
NO _x	22.4		
SO ₂	4.9		
VOC	8.6		
NMOC	20.4		
HAPs	4.4		

* Emissions for all pollutants that the source is major for and all regulated air pollutants must be reported. See Attachment A.

COMBUSTION EMISSION UNIT (FORM 5-C1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
DISTRICT ID:	
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. PERMIT NUMBER: 91-VP-35e

II. EMISSION UNIT DESCRIPTION

1. Equipment type: Internal Combustion Engine
2. Equipment description: Water Pump
3. Equipment make, model & serial number: Caterpillar, Model 3304b
4. Maximum design process rate or maximum power input/output: 93 horsepower
5. Primary use: Water Pump
6. Burner(s) design, operating temperature and capacity:
7. Control device(s) type and description (if any): N/A

III. OPERATIONAL INFORMATION

1. Operating schedule: _____ 24 (hours/day) _____ 200 (hours/year)
2. Exhaust gas properties (temperature, SCFM, %H₂O, %O₂ or %CO₂, % excess air):

3. Fuel specifications:

FUEL TYPE (name)	ANNUAL USAGE (c.f./yr, lb/yr, gal/yr)	HEATING VALUE (BTU/lb or BTU/gal)	SULFUR (%)	NITROGEN (%)
Diesel	6.6 gal/hr, max; 0 gallons/yr actual in 2011	138,500 Btu/gal	<15 ppmw	90 ppm, max

COMBUSTION EMISSION UNIT (FORM 5-C2)

DISTRICT: Shasta County Air Quality Management District	DISTRICT:
COMPANY NAME: Anderson Landfill, Inc	COMPANY NAME: Anderson Landfill

4. Unit emissions:

CRITERIA POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions	See Appendix B for detailed Emission Calculations				
B. Pre-modification Emissions¹					
C. Emission Change²					
D. Emission Limit³					
OTHER REGULATED AIR POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions	See Appendix B for detailed Emission Calculations				
B. Pre-Modification Emissions¹					
C. Emission Change²					
D. Emission Limit³					

¹ For permit modifications only; emissions prior to project modification.
² Difference between Pre-Modification Emissions (Section B.) and Emissions (Section A.).
³ For voluntary emissions cap and emission limits [i.e. expressed as parts per million (ppm) corrected for dilution air, pounds per hour (lbs/hr), pounds per million BTU (lb/MMBTU, etc.) required by any applicable federal requirement].

COMBUSTION EMISSION UNIT (FORM 5-C1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. PERMIT NUMBER: 91-VP-35e

II. EMISSION UNIT DESCRIPTION

1. Equipment type: Internal Combustion Engine
2. Equipment description: Tipper Engine
3. Equipment make, model & serial number: Caterpillar engine model 3054
4. Maximum design process rate or maximum power input/output: 130 horsepower
5. Primary use: Municipal Solid Waste Processing
6. Burner(s) design, operating temperature and capacity:
7. Control device(s) type and description (if any): N/A

III. OPERATIONAL INFORMATION

1. Operating schedule: _____ 24 _____ (hours/day) _____ 200 _____ (hours/year)
2. Exhaust gas properties (temperature, SCFM, %H₂O, %O₂ or %CO₂, % excess air):

3. Fuel specifications:

FUEL TYPE (name)	ANNUAL USAGE (c.f./yr, lb/yr, gal/yr)	HEATING VALUE (BTU/lb or BTU/gal)	SULFUR (%)	NITROGEN (%)
Diesel	6.6 gal/hr, max; 3,500 gallons/yr actual in 2011	138,500 Btu/gal	<15 ppmw	90 ppm, max

COMBUSTION EMISSION UNIT (FORM 5-C2)

DISTRICT: Shasta County Air Quality Management District	DISTRICT:
COMPANY NAME: Anderson Landfill, Inc	COMPANY NAME: Anderson Landfill

4. Unit emissions:

CRITERIA POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions	See Appendix B for detailed Emission Calculations				
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					
OTHER REGULATED AIR POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions	See Appendix B for detailed Emission Calculations				
B. Pre-Modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					

¹ For permit modifications only; emissions prior to project modification.
² Difference between Pre-Modification Emissions (Section B.) and Emissions (Section A.).
³ For voluntary emissions cap and emission limits [i.e. expressed as parts per million (ppm) corrected for dilution air, pounds per hour (lbs/hr), pounds per million BTU (lb/MMBTU, etc.)] required by any applicable federal requirement.

COATING / SOLVENT EMISSION UNIT (FORM 5-D1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◀
DISTRICT ID:	
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. PERMIT NUMBER: N/A – NO COATING/SOLVENT EMISSION UNITS

II. EQUIPMENT DESCRIPTION

1. Equipment type:
2. Equipment description:
3. Equipment make, model & serial number:
4. Maximum design process rate or throughput:
5. Control device(s) type and description (if any):
6. Description of coating/solvent application/drying method(s) employed including coating transfer:
7. List and describe primary coating/solvent process equipment used:

III. OPERATIONAL INFORMATION

1. Operating schedule: (hours/day): (hours/year)
2. Coatings/solvents information:

COATING/ SOLVENT (name)	MANUFACTURER (name)	MAXIMUM USE (gal/day, gal/yr)	VAPOR PRESSURE (mm of Hg)	SOLIDS CONTENT (%)	VOC CONTENT (%)

COATING / SOLVENT EMISSION UNIT (FORM 5-D2)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

3. Unit emissions: N/A – NO COATING/SOLVENT EMISSION UNITS

CRITERIA POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions					
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					

OTHER REGULATED AIR POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions					
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					

¹ For permit modifications only; emissions prior to project modification.

² Difference between Pre-Modification Emissions (Section B.) and Emissions (Section A.).

³ For voluntary emissions cap and emission limits [i.e. expressed as parts per million (ppm) corrected for dilution air, pounds per hour (lbs/hr), pounds per million BTU (lb/MMBTU, etc.) required by any applicable federal requirement.

ORGANIC LIQUID STORAGE UNIT (FORM 5-E1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
DISTRICT ID:	
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. PERMIT NUMBER: N/A – NO ORGANIC LIQUID STORAGE UNITS

II. EQUIPMENT DESCRIPTION

1. Equipment type:
2. Equipment description:
3. Equipment make, model & serial number:
4. Control device(s) type and description (if any):

III. OPERATIONAL INFORMATION

1. Operating schedule: (hours/day) (hours/year)
2. Raw material used or processed:

ORGANIC LIQUID	VAPOR PRESSURE (psia)	BOILING POINT (F)	STORAGE TEMPERATURE (F)	LIQUID THROUGHPUT (gals/year)

3. Total annual throughput: (1000 gallons)
4. Profile of material throughput: Jan-Mar (% of total) April-June (% of total)
July-Sep (% of total) Oct-Dec (% of total)

IV. TANK DESIGN AND SPECIFICATIONS

1. Tank design: Floating Roof (external) Floating Roof (internal)
 Fixed Roof Underground
 Pressure Other:
2. Tank specifications: Max Fill Rate: (gals/hr) Max Withdrawal: (gal/hr)
Height: (ft) Vapor Space: (ft)
Diameter: (ft) Paint color:
Capacity: (gal)
3. Shell type: Gunited Riveted Welded Other:

ORGANIC LIQUID STORAGE UNIT (FORM 5-E2)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
DISTRICT ID:	
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

4. Roof type: Pan Pontoon Other:
 5. Tank Seals: Single Seal Double Seal

Primary Seal Shoe Type:

- Metallic Shoe
- Vapor Mounted Resilient Seal
- Liquid Mounted Resilient Seal
- Wiper Seal
- Other:

Secondary Seal Shoe Type:

- Shoe Mounted Wiper Seal
- Rim Mounted Wiper Seal
- Weathershield
- Other:

6. Unit emissions:

CRITERIA POLLUTANT EMISSIONS (tons per year)

POLLUTANTS					
A. Emissions					
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					

OTHER REGULATED AIR POLLUTANT EMISSIONS (tons per year)

POLLUTANTS					
A. Emissions					
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					

¹ For permit modifications only; emissions prior to project modification.

² Difference between Pre-Modification Emissions (Section B.) and Emissions (Section A.).

³ For voluntary emissions cap and emission limits [i.e. expressed as parts per million (ppm) corrected for dilution air, pounds per hour (lbs/hr), pounds per million BTU (lb/MMBTU, etc.) required by any applicable federal requirement.

GENERAL EMISSION UNIT (FORM 5-F1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
DISTRICT ID:	
COMPANY NAME: Anderson Landfill, Inc.	FACILITY NAME: Anderson Landfill

I. PERMIT NUMBER: 91-VP-35e

II. EQUIPMENT DESCRIPTION

1. General process description: Municipal Solid Waste Landfill
2. Equipment type: N/A
3. Equipment description: Municipal Solid Waste Landfill
4. Equipment make, model & serial number: N/A
5. Maximum design process rate or throughput: N/A
6. Control device(s) type and description (if any): Enclosed Landfill Gas Flare

III. OPERATIONAL INFORMATION

1. Operating schedule: 10 (hours/day) 2600 (hours/year)

2. Exhaust gas flow rate: SCFM @ %H₂O N/A

3. Raw products used and finished products produced:

RAW PRODUCT USED (name)	CONSUMPTION (lbs/hr, gal/hr, etc.)	PRODUCTS PRODUCED (name)	PRODUCTION (lbs/hr, gal/hr, etc.)
Municipal Solid Waste	1,850 Tons/day	Landfill Gas	See LANDGEM Run in Appendix B

GENERAL EMISSION UNIT (FORM 5-F2)

DISTRICT: Shasta County Air Quality Management District	DISTRICT:
COMPANY NAME: Anderson Landfill, Inc.	COMPANY NAME: Anderson Landfill

4. Unit emissions:

CRITERIA POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions	See Appendix B for detailed Emission Calculations				
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					
OTHER REGULATED AIR POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS					
A. Emissions	See Appendix B for detailed Emission Calculations				
B. Pre-modification Emissions ¹					
C. Emission Change ²					
D. Emission Limit ³					

¹ For permit modifications only: emissions prior to project modification.

² Difference between Pre-Modification Emissions (Section B) and Emissions (Section A).

³ For voluntary emissions cap and emission limits [i.e. expressed as parts per million (ppm) corrected for dilution air, pounds per hour (lbs/hr), pounds per million BTU (lb/MMBTU, etc.) required by any applicable federal requirement.

EMISSION CONTROL UNIT (FORM 5-G1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. PERMIT NUMBER: 91-VP-35e

II. EQUIPMENT DESCRIPTION

1. General process description: Enclosed Landfill Gas Flare
2. Equipment type: Flare
3. Equipment description: 45 MMBtu/hr, 1,500 scfm, input landfill gas
4. Equipment make, model & serial number: LFG Specialties, Inc.; EF84018
5. Emission unit(s) served by this equipment: MSW Landfill
6. Maximum design or rated capacity: 45 MMBtu/hr, 1,500 scfm, input landfill gas

III. EQUIPMENT DESIGN INFORMATION

1. Exhaust gas: Temperature: 1,400 (F) Flow Rate: 27,445 (SCFM)
Moisture: (%) Oxygen: (%)
CO₂: (%)
2. General: Manufacturer: LFG Specialties, Inc. Pressure Drop: N/A (in-Hg)
Inlet Temp.: 100 (F) Outlet Temp.: 1,400 (F)
3. Catalyst data: N/A Catalyst Type/Material:
Catalyst Life: (years) Volume: (Ft³)
Space Velocity: (Ft³/Ft) NH₃ inj. Rate: (gal/hr)
NH₃ Inj. Temp.: (F)
4. Baghouse data: N/A Design: Positive Pressure Negative Pressure
Cleaning Method:
Fabric Material:
Flow Rate: (SCFM) Air/Cloth Ratio:
5. ESP data: N/A Number of fields: Cleaning Method:
Power Input:
6. Scrubber data: N/A Type/design: Sorbent Type:
7. Other Control Devices (include appropriate design information): N/A

EMISSION CONTROL UNIT (FORM 5-G2)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY►
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

IV. OPERATIONAL INFORMATION

1. Operating schedule: 24 (hours/day) 8760 (hours/year)
 2. Raw products used by control device: Landfill Gas
 3. Operating information:

POLLUTANTS AND EMISSION CONTROL INFORMATION

1 Specify percent O₂ or percent CO₂.

EXEMPT EQUIPMENT (FORM 5-H)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY►
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. EQUIPMENT EXEMPT FROM DISTRICT PERMIT REQUIREMENTS (SEE DISTRICT RULE 2:5)

EXEMPT EQUIPMENT	EQUIPMENT DESCRIPTION	BASIS FOR EXEMPTION
(1) above-ground 10,000 gallon storage tank containing diesel fuel		Rule V Appendix 1 Section B.7.c
(3) above ground 550 gallon storage tanks containing gasoline, hydraulic oil, and motor oil		Rule V Appendix 1 Section B.7.b and c
(1) above ground 350 gallon storage tanks containing used oil		Rule V Appendix 1 Section B.7.b
(5) emergency gasoline/diesel generators/welders (23, 9, 5.5 horsepower/5.5 and 6.5 kilowatts)		Rule V Appendix 1 Section B.2.b and c
(3) portable diesel/gasoline water pumps (33, 11, 8 horsepower)		Rule V Appendix 1 Section B.2.b and c
(2) portable gasoline compressors (13, 11 horsepower)		Rule V Appendix 1 Section B.2.b and c
(1) pressure washer with an 13 horsepower motor		Rule V Appendix 1 Section B.2.b and c

COMPLIANCE PLAN (FORM 5-I1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◀
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. PROCEDURE FOR USING FORM 5-I

[REDACTED] This form shall be submitted as part of the Title V Application. The Responsible Official shall identify the applicable federal requirement(s) to which the source is subject. In the Compliance Plan (Form 5-I2), a Responsible Official shall identify whether the source identified in the Title V Application currently operates in compliance with all applicable federal requirements.

II. APPLICABLE FEDERAL REQUIREMENTS

1 If exempt from applicable federal requirement, attach explanation for exemption.

2 If exempt from applicable federal requirement, attach explanation for exemption.
Indicate the date during the permit term that the applicable federal requirement will become effective.

COMPLIANCE PLAN (FORM 5-I2)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄ DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

III. COMPLIANCE CERTIFICATION

Under penalty of perjury, I certify the following:

- Based on information and belief formed after reasonable inquiry, the source identified in this application will continue to comply with the applicable federal requirement(s) with which the source is in compliance identified in form 5-II;
- Based on information and belief formed after reasonable inquiry, the source identified in this application will comply with the future-effective applicable federal requirement(s) identified in form 5-II, on a timely basis¹;
- Based on information and belief formed after reasonable inquiry, the source identified in this application is not in compliance with the applicable federal requirement(s), identified in form 5-II, and I have attached a compliance plan schedule.²



9-14-2012

Signature of Responsible Official

Date

1. Unless a more detailed schedule is expressively required by the applicable federal requirement.
2. At the time of expected permit issuance, if the source expects to be out of compliance with an applicable federal requirement, the applicant is required to provide a compliance schedule with this application, with the following exception. A source which is operating under a variance that is effective for less than 90 days need not submit a Compliance Schedule. For sources operating under a variance, which is in effect for more than 90 days, the Compliance Schedule is the schedule that was approved as part of the variance granted by the hearing board.

The compliance schedule shall contain a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with this applicable federal requirement. For sources operating under a variance, the compliance schedule is part of the variance granted by the hearing board. The compliance schedule shall resemble, and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. For sources not operating under a variance, consult the Air Pollution Control Officer regarding procedures for obtaining a compliance schedule.

COMPLIANCE PLAN CERTIFICATION (FORM 5-J1)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◀
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc	FACILITY NAME: Anderson Landfill

I. CERTIFICATION STATUS

1. Indicate the dates the applicant intends to submit the **COMPLIANCE CERTIFICATION REPORT** to the district during the entire permit term. The district federal operating permits rule requires the applicant to submit this report at least annually.

May 15th for the previous year.

2. For sources required to have a schedule of compliance to remedy a violation, indicate the dates the applicant intends to submit **CERTIFIED PROGRESS REPORTS** to the district during the permit term. The district federal operating permits rule requires the applicant to submit this report at least semiannually.

Semiannually on May 15th and November 15th.

3. Describe the compliance status of the source with respect to applicable enhanced monitoring, and compliance certification requirements of Section 114(a)(3) of the Clean Air Act:

N/A – Source subject to Federal Standard (i.e. NSPS/EG), therefore, enhanced monitoring not required.

COMPLIANCE PLAN CERTIFICATION (FORM 5-J2)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY◄
COMPANY NAME: Anderson Landfill, Inc	DISTRICT ID:
	FACILITY NAME: Anderson Landfill

II. CERTIFICATION INFORMATION

EMISSION UNIT or
PERMIT NUMBER: 91-VP-35e

APPLICABLE
FEDERAL

REQUIREMENT: 40 CFR 60, Subpart Cc/WWW; 40 CFR 63, Subpart AAAA;
SCAQMD Rule 3:29

METHOD	DESCRIPTION OR REFERENCE METHOD
Monitoring	Rule 3:29 Section E.6
	40 CFR 60.756
Reporting	Rule 3:29 Section F
	40 CFR 60.757
	40 CFR 63.1980
Record Keeping	Rule 3:29 Section F
	40 CFR 60.758
	40 CFR 63.1980
Test Methods	Rule 3:29 Section G.4
	40 CFR 60.754

EMISSION UNIT or
PERMIT NUMBER: 91-VP-35e

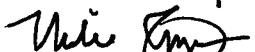
APPLICABLE
FEDERAL
REQUIREMENT: 40 CFR 61, Subpart M

METHOD	DESCRIPTION OR REFERENCE METHOD
Monitoring	
Reporting	Inactive: 40 CFR 61.151(d)
	Active: 40 CFR 61.154(j)
	40 CFR 61.153
Record Keeping	40 CFR 154(e), (f)
Test Methods	

List Other Forms or Attachments (cont.)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, that the information contained in this application, composed of the forms and attachments identified above, are true, accurate, and complete.

I certify that I am the responsible official, as defined in Rule 5.


Signature of Responsible Official

9-14-2012
Date

Mike Rivera
Print Name of Responsible Official

DISTRICT MANAGER
Title of Responsible Official and Company Name

CERTIFICATION STATEMENT (FORM 5-M)

DISTRICT: Shasta County Air Quality Management District	► DISTRICT USE ONLY ◀
	DISTRICT ID:
COMPANY NAME: Anderson Landfill, Inc.	FACILITY NAME: Anderson Landfill

Identify, by checking off below, the forms and attachments that are part of your application. If the application contains forms or attachments that are not identified below, please identify these attachments in the blank space provided below. Review the instructions if

Forms included with application

- Stationary Source Summary Form
- Total Stationary Source Emission Form
- Compliance Plan Form
- Compliance Plan Certification
- Exempt Equipment Form
- Certification Statement Form

List other forms or attachments

- General Emissions Unit
- Appendix B – Emission Calculations

[] check here if additional forms

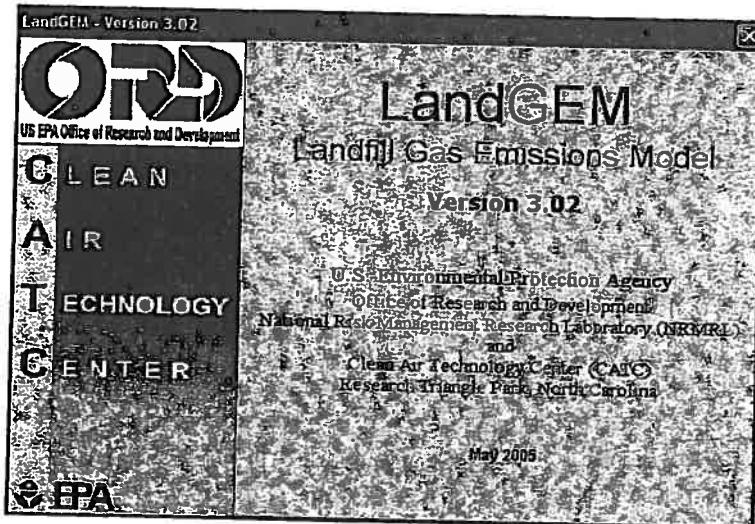
Attachments included with application

- Description of Operating Scenarios
- Sample emission calculations
- Fugitive emission estimates
- List of Applicable requirements
- Discussion of units out of compliance with applicable federal requirements and, if required, submit a schedule of Compliance
- Facility schematic showing emission Points (Site Plan)
- NSR Permit
- PSD Permit
- Enhanced monitoring protocols
- Risk management verification per 112(r)

you are unsure of the forms and attachments that need to be included in a complete application.

APPENDIX A

EPA LANDFILL GAS EMISSIONS MODEL (LANDGEM) OUTPUTS



Summary Report

Landfill Name or Identifier: Anderson Landfill, Inc - Title V Update

Date: Wednesday, February 14, 2007

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 k L_o \left(\frac{M_i}{10} \right) e^{-kt_{i,j}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation (m^3/year)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate (year^{-1})

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

$t_{i,j}$ = age of the j^{th} section of waste mass M_i accepted in the i^{th} year
(decimal years, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1977
Landfill Closure Year (with 80-year limit)	2054
Actual Closure Year (without limit)	2054
Have Model Calculate Closure Year?	Yes
Waste Design Capacity	9,765,257 megagrams

MODEL PARAMETERS

Methane Generation Rate, k	0.040	year ⁻¹
Potential Methane Generation Capacity, L _o	100	m ³ /Mg
NMOC Concentration	4,000	ppmv as hexane
Methane Content	50	% by volume

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1977	20,792	22,871	0	0
1978	20,792	22,871	20,792	22,871
1979	20,792	22,871	41,584	45,742
1980	20,792	22,871	62,376	68,614
1981	83,166	91,483	83,168	91,485
1982	23,373	25,710	166,334	182,967
1983	21,785	23,964	189,707	208,678
1984	22,667	24,934	211,492	232,641
1985	22,312	24,543	234,159	257,575
1986	15,520	17,072	256,471	282,118
1987	19,093	21,002	271,991	299,190
1988	34,347	37,782	291,084	320,192
1989	32,648	35,913	325,431	357,974
1990	38,148	41,963	358,079	393,887
1991	82,918	91,210	396,227	435,850
1992	48,234	53,057	479,145	527,060
1993	43,054	47,359	527,379	580,117
1994	70,522	77,574	570,433	627,476
1995	101,557	111,713	640,955	705,051
1996	47,258	51,984	742,512	816,763
1997	46,625	51,288	789,770	868,747
1998	38,807	42,688	836,395	920,035
1999	36,082	39,690	875,202	962,722
2000	43,333	47,666	911,284	1,002,412
2001	65,455	72,001	954,617	1,050,079
2002	77,273	85,000	1,020,072	1,122,079
2003	109,091	120,000	1,097,345	1,207,080
2004	140,909	155,000	1,206,436	1,327,080
2005	145,136	159,650	1,347,345	1,482,080
2006	131,659	144,825	1,492,481	1,641,729
2007	132,976	146,274	1,624,140	1,786,554
2008	134,306	147,736	1,757,116	1,932,828
2009	135,649	149,214	1,891,422	2,080,564
2010	137,005	150,706	2,027,071	2,229,778
2011	138,375	152,213	2,164,076	2,380,483
2012	139,759	153,735	2,302,451	2,532,696
2013	141,157	155,272	2,442,210	2,686,431
2014	142,568	156,825	2,583,367	2,841,704
2015	143,994	158,393	2,725,935	2,998,529
2016	145,434	159,977	2,869,929	3,156,922

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2017	146,888	161,577	3,015,363	3,316,899
2018	148,357	163,193	3,162,251	3,478,477
2019	149,841	164,825	3,310,609	3,641,669
2020	151,339	166,473	3,460,449	3,806,494
2021	152,852	168,138	3,611,788	3,972,967
2022	154,381	169,819	3,764,641	4,141,105
2023	155,925	171,517	3,919,022	4,310,924
2024	157,484	173,232	4,074,947	4,482,441
2025	159,059	174,965	4,232,431	4,655,674
2026	160,649	176,714	4,391,490	4,830,639
2027	162,256	178,482	4,552,139	5,007,353
2028	163,879	180,266	4,714,395	5,185,835
2029	165,517	182,069	4,878,274	5,366,101
2030	167,173	183,890	5,043,791	5,548,170
2031	168,844	185,729	5,210,963	5,732,060
2032	170,533	187,586	5,379,808	5,917,788
2033	172,238	189,462	5,550,340	6,105,374
2034	173,960	191,356	5,722,578	6,294,836
2035	175,700	193,270	5,896,539	6,486,193
2036	177,457	195,203	6,072,239	6,679,463
2037	179,232	197,155	6,249,696	6,874,665
2038	181,024	199,126	6,428,927	7,071,820
2039	182,834	201,118	6,609,951	7,270,946
2040	184,662	203,129	6,792,785	7,472,064
2041	186,509	205,160	6,977,448	7,675,193
2042	188,374	207,212	7,163,957	7,880,352
2043	190,258	209,284	7,352,331	8,087,564
2044	192,160	211,377	7,542,589	8,296,848
2045	194,082	213,490	7,734,749	8,508,224
2046	196,023	215,625	7,928,831	8,721,715
2047	197,983	217,781	8,124,854	8,937,340
2048	199,963	219,959	8,322,838	9,155,121
2049	201,963	222,159	8,522,801	9,375,081
2050	203,982	224,380	8,724,763	9,597,239
2051	206,022	226,624	8,928,745	9,821,620
2052	208,082	228,891	9,134,767	10,048,244
2053	210,163	231,179	9,342,850	10,277,135
2054	212,244	233,469	9,553,013	10,508,314
2055	0	0	9,765,257	10,741,783
2056	0	0	9,765,257	10,741,783

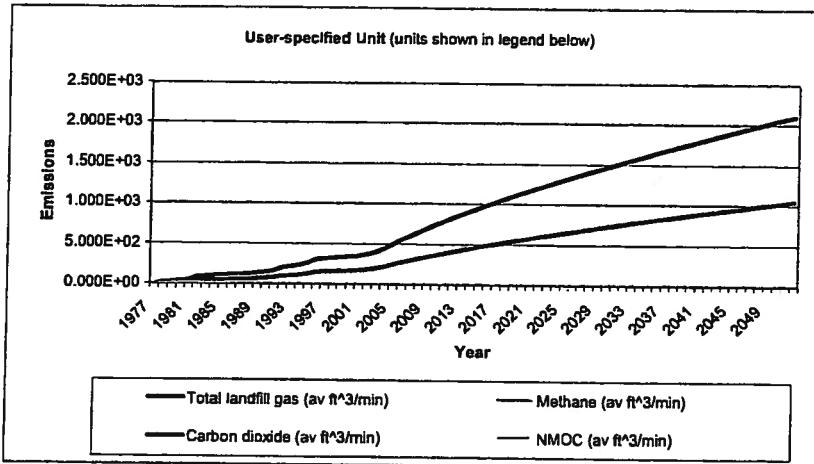
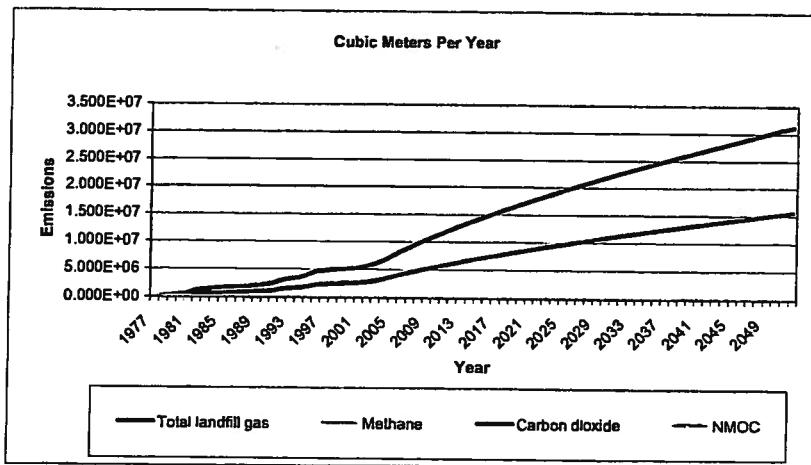
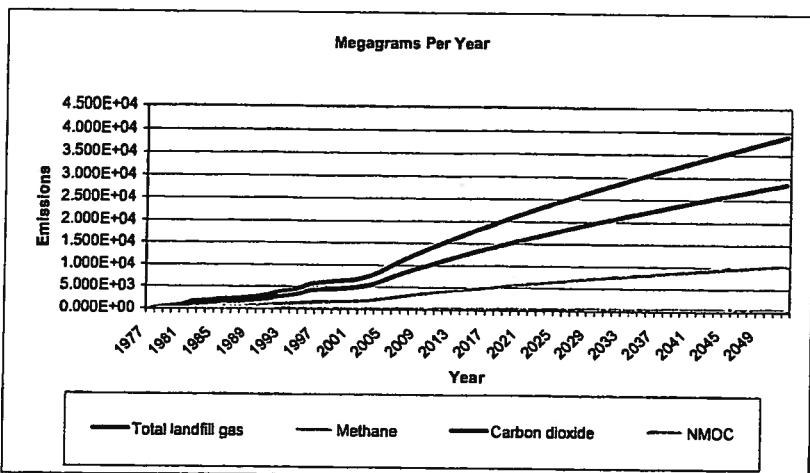
Pollutant Parameters

		Gas / Pollutant Default Parameters:		User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Pollutant Parameters (Continued)

	Gas / Pollutant Default Parameters:		User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13	
	Ethylbenzene - HAP/VOC	4.6	106.16	
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88	
	Fluorotrichloromethane - VOC	0.76	137.38	
	Hexane - HAP/VOC	6.6	86.18	
	Hydrogen sulfide	36	34.08	
	Mercury (total) - HAP	2.9E-04	200.61	
	Methyl ethyl ketone - HAP/VOC	7.1	72.11	
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16	
	Methyl mercaptan - VOC	2.5	48.11	
	Pentane - VOC	3.3	72.15	
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83	
	Propane - VOC	11	44.09	
	1,1,2-Dichloroethene - VOC	2.8	96.94	
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13	
	Toluene - Co-disposal - HAP/VOC	170	92.13	
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40	
	Vinyl chloride - HAP/VOC	7.3	62.50	
	Xylenes - HAP/VOC	12	106.16	

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1977	0	0	0	0	0	0
1978	2.040E+02	1.634E+05	1.098E+01	5.450E+01	8.169E+04	5.489E+00
1979	4.001E+02	3.204E+05	2.152E+01	1.069E+02	1.602E+05	1.076E+01
1980	5.884E+02	4.712E+05	3.166E+01	1.572E+02	2.356E+05	1.583E+01
1981	7.694E+02	6.161E+05	4.139E+01	2.055E+02	3.080E+05	2.070E+01
1982	1.555E+03	1.245E+06	8.368E+01	4.154E+02	6.227E+05	4.184E+01
1983	1.724E+03	1.380E+06	9.274E+01	4.604E+02	6.901E+05	4.637E+01
1984	1.870E+03	1.497E+06	1.006E+02	4.995E+02	7.487E+05	5.030E+01
1985	2.019E+03	1.617E+06	1.086E+02	5.393E+02	8.084E+05	5.431E+01
1986	2.159E+03	1.729E+06	1.161E+02	5.766E+02	8.643E+05	5.807E+01
1987	2.226E+03	1.783E+06	1.198E+02	5.947E+02	8.914E+05	5.989E+01
1988	2.326E+03	1.863E+06	1.252E+02	6.214E+02	9.315E+05	6.259E+01
1989	2.572E+03	2.060E+06	1.384E+02	6.871E+02	1.030E+06	6.920E+01
1990	2.792E+03	2.236E+06	1.502E+02	7.457E+02	1.118E+06	7.510E+01
1991	3.057E+03	2.448E+06	1.645E+02	8.165E+02	1.224E+06	8.223E+01
1992	3.751E+03	3.003E+06	2.018E+02	1.002E+03	1.502E+06	1.009E+02
1993	4.077E+03	3.264E+06	2.193E+02	1.089E+03	1.632E+06	1.097E+02
1994	4.339E+03	3.475E+06	2.335E+02	1.159E+03	1.737E+06	1.167E+02
1995	4.861E+03	3.893E+06	2.616E+02	1.299E+03	1.946E+06	1.308E+02
1996	5.667E+03	4.538E+06	3.049E+02	1.514E+03	2.269E+06	1.525E+02
1997	5.909E+03	4.731E+06	3.179E+02	1.578E+03	2.366E+06	1.590E+02
1998	6.135E+03	4.912E+06	3.301E+02	1.639E+03	2.456E+06	1.650E+02
1999	6.275E+03	5.025E+06	3.376E+02	1.676E+03	2.512E+06	1.688E+02
2000	6.383E+03	5.111E+06	3.434E+02	1.705E+03	2.556E+06	1.717E+02
2001	6.558E+03	5.251E+06	3.528E+02	1.752E+03	2.626E+06	1.764E+02
2002	6.943E+03	5.560E+06	3.736E+02	1.855E+03	2.780E+06	1.868E+02
2003	7.429E+03	5.949E+06	3.997E+02	1.984E+03	2.974E+06	1.999E+02
2004	8.208E+03	6.573E+06	4.416E+02	2.193E+03	3.286E+06	2.208E+02
2005	9.269E+03	7.422E+06	4.987E+02	2.476E+03	3.711E+06	2.494E+02
2006	1.033E+04	8.272E+06	5.558E+02	2.759E+03	4.136E+06	2.779E+02
2007	1.122E+04	8.982E+06	6.035E+02	2.996E+03	4.491E+06	3.017E+02
2008	1.208E+04	9.675E+06	6.500E+02	3.227E+03	4.837E+06	3.250E+02
2009	1.293E+04	1.035E+07	6.955E+02	3.453E+03	5.175E+06	3.477E+02
2010	1.375E+04	1.101E+07	7.398E+02	3.673E+03	5.505E+06	3.699E+02
2011	1.456E+04	1.166E+07	7.831E+02	3.888E+03	5.828E+06	3.916E+02
2012	1.534E+04	1.229E+07	8.255E+02	4.098E+03	6.143E+06	4.127E+02
2013	1.611E+04	1.290E+07	8.669E+02	4.304E+03	6.451E+06	4.335E+02
2014	1.687E+04	1.351E+07	9.074E+02	4.505E+03	6.753E+06	4.537E+02
2015	1.760E+04	1.410E+07	9.471E+02	4.702E+03	7.048E+06	4.736E+02
2016	1.833E+04	1.468E+07	9.860E+02	4.895E+03	7.338E+06	4.930E+02
2017	1.904E+04	1.524E+07	1.024E+03	5.084E+03	7.621E+06	5.121E+02
2018	1.973E+04	1.580E+07	1.062E+03	5.270E+03	7.899E+06	5.308E+02
2019	2.041E+04	1.635E+07	1.098E+03	5.452E+03	8.173E+06	5.491E+02
2020	2.108E+04	1.688E+07	1.134E+03	5.631E+03	8.441E+06	5.671E+02
2021	2.174E+04	1.741E+07	1.170E+03	5.807E+03	8.705E+06	5.849E+02
2022	2.239E+04	1.793E+07	1.205E+03	5.980E+03	8.964E+06	6.023E+02
2023	2.303E+04	1.844E+07	1.239E+03	6.150E+03	9.219E+06	6.194E+02
2024	2.365E+04	1.894E+07	1.273E+03	6.318E+03	9.470E+06	6.363E+02
2025	2.427E+04	1.943E+07	1.306E+03	6.483E+03	9.717E+06	6.529E+02
2026	2.488E+04	1.992E+07	1.339E+03	6.646E+03	9.961E+06	6.693E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2027	2.548E+04	2.040E+07	1.371E+03	6.806E+03	1.020E+07	6.855E+02
2028	2.607E+04	2.088E+07	1.403E+03	6.965E+03	1.044E+07	7.014E+02
2029	2.666E+04	2.135E+07	1.434E+03	7.121E+03	1.067E+07	7.172E+02
2030	2.724E+04	2.181E+07	1.465E+03	7.276E+03	1.091E+07	7.327E+02
2031	2.781E+04	2.227E+07	1.496E+03	7.429E+03	1.113E+07	7.481E+02
2032	2.838E+04	2.272E+07	1.527E+03	7.580E+03	1.136E+07	7.634E+02
2033	2.894E+04	2.317E+07	1.557E+03	7.730E+03	1.159E+07	7.785E+02
2034	2.949E+04	2.362E+07	1.587E+03	7.878E+03	1.181E+07	7.934E+02
2035	3.004E+04	2.406E+07	1.616E+03	8.025E+03	1.203E+07	8.082E+02
2036	3.059E+04	2.450E+07	1.646E+03	8.171E+03	1.225E+07	8.229E+02
2037	3.113E+04	2.493E+07	1.675E+03	8.316E+03	1.246E+07	8.375E+02
2038	3.167E+04	2.536E+07	1.704E+03	8.459E+03	1.268E+07	8.520E+02
2039	3.220E+04	2.579E+07	1.733E+03	8.602E+03	1.289E+07	8.664E+02
2040	3.274E+04	2.621E+07	1.761E+03	8.744E+03	1.311E+07	8.806E+02
2041	3.326E+04	2.664E+07	1.790E+03	8.885E+03	1.332E+07	8.949E+02
2042	3.379E+04	2.706E+07	1.818E+03	9.026E+03	1.353E+07	9.090E+02
2043	3.431E+04	2.748E+07	1.846E+03	9.166E+03	1.374E+07	9.231E+02
2044	3.484E+04	2.789E+07	1.874E+03	9.305E+03	1.395E+07	9.371E+02
2045	3.536E+04	2.831E+07	1.902E+03	9.444E+03	1.416E+07	9.511E+02
2046	3.587E+04	2.873E+07	1.930E+03	9.582E+03	1.436E+07	9.650E+02
2047	3.639E+04	2.914E+07	1.958E+03	9.720E+03	1.457E+07	9.790E+02
2048	3.691E+04	2.955E+07	1.986E+03	9.858E+03	1.478E+07	9.928E+02
2049	3.742E+04	2.997E+07	2.013E+03	9.996E+03	1.498E+07	1.007E+03
2050	3.794E+04	3.038E+07	2.041E+03	1.013E+04	1.519E+07	1.021E+03
2051	3.845E+04	3.079E+07	2.069E+03	1.027E+04	1.539E+07	1.034E+03
2052	3.896E+04	3.120E+07	2.096E+03	1.041E+04	1.560E+07	1.048E+03
2053	3.948E+04	3.161E+07	2.124E+03	1.055E+04	1.581E+07	1.062E+03
2054	3.999E+04	3.202E+07	2.152E+03	1.068E+04	1.601E+07	1.076E+03
2055	4.051E+04	3.244E+07	2.179E+03	1.082E+04	1.622E+07	1.090E+03
2056	3.892E+04	3.116E+07	2.094E+03	1.040E+04	1.558E+07	1.047E+03
2057	3.739E+04	2.994E+07	2.012E+03	9.988E+03	1.497E+07	1.006E+03
2058	3.593E+04	2.877E+07	1.933E+03	9.596E+03	1.438E+07	9.665E+02
2059	3.452E+04	2.764E+07	1.857E+03	9.220E+03	1.382E+07	9.286E+02
2060	3.316E+04	2.656E+07	1.764E+03	8.859E+03	1.328E+07	8.922E+02
2061	3.186E+04	2.552E+07	1.714E+03	8.511E+03	1.276E+07	8.572E+02
2062	3.061E+04	2.451E+07	1.647E+03	8.178E+03	1.226E+07	8.236E+02
2063	2.941E+04	2.355E+07	1.583E+03	7.857E+03	1.178E+07	7.913E+02
2064	2.826E+04	2.263E+07	1.521E+03	7.549E+03	1.132E+07	7.603E+02
2065	2.715E+04	2.174E+07	1.461E+03	7.253E+03	1.087E+07	7.304E+02
2066	2.609E+04	2.089E+07	1.404E+03	6.968E+03	1.045E+07	7.018E+02
2067	2.507E+04	2.007E+07	1.349E+03	6.695E+03	1.004E+07	6.743E+02
2068	2.408E+04	1.928E+07	1.296E+03	6.433E+03	9.642E+06	6.479E+02
2069	2.314E+04	1.853E+07	1.245E+03	6.180E+03	9.264E+06	6.224E+02
2070	2.223E+04	1.780E+07	1.196E+03	5.938E+03	8.901E+06	5.980E+02
2071	2.136E+04	1.710E+07	1.149E+03	5.705E+03	8.552E+06	5.746E+02
2072	2.052E+04	1.643E+07	1.104E+03	5.482E+03	8.216E+06	5.521E+02
2073	1.972E+04	1.579E+07	1.061E+03	5.267E+03	7.894E+06	5.304E+02
2074	1.894E+04	1.517E+07	1.019E+03	5.060E+03	7.585E+06	5.096E+02
2075	1.820E+04	1.457E+07	9.793E+02	4.862E+03	7.287E+06	4.896E+02
2076	1.749E+04	1.400E+07	9.409E+02	4.671E+03	7.002E+06	4.704E+02
2077	1.680E+04	1.345E+07	9.040E+02	4.488E+03	6.727E+06	4.520E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2078	1.614E+04	1.293E+07	8.685E+02	4.312E+03	6.463E+06	4.343E+02
2079	1.551E+04	1.242E+07	8.345E+02	4.143E+03	6.210E+06	4.172E+02
2080	1.490E+04	1.193E+07	8.018E+02	3.980E+03	5.966E+06	4.009E+02
2081	1.432E+04	1.146E+07	7.703E+02	3.824E+03	5.732E+06	3.852E+02
2082	1.376E+04	1.102E+07	7.401E+02	3.674E+03	5.508E+06	3.701E+02
2083	1.322E+04	1.058E+07	7.111E+02	3.530E+03	5.292E+06	3.555E+02
2084	1.270E+04	1.017E+07	6.832E+02	3.392E+03	5.084E+06	3.416E+02
2085	1.220E+04	9.770E+06	6.564E+02	3.259E+03	4.885E+06	3.282E+02
2086	1.172E+04	9.387E+06	6.307E+02	3.131E+03	4.693E+06	3.153E+02
2087	1.126E+04	9.019E+06	6.060E+02	3.008E+03	4.509E+06	3.030E+02
2088	1.082E+04	8.665E+06	5.822E+02	2.890E+03	4.332E+06	2.911E+02
2089	1.040E+04	8.325E+06	5.594E+02	2.777E+03	4.163E+06	2.797E+02
2090	9.989E+03	7.999E+06	5.374E+02	2.668E+03	3.999E+06	2.687E+02
2091	9.597E+03	7.685E+06	5.164E+02	2.564E+03	3.843E+06	2.582E+02
2092	9.221E+03	7.384E+06	4.961E+02	2.463E+03	3.692E+06	2.481E+02
2093	8.859E+03	7.094E+06	4.767E+02	2.366E+03	3.547E+06	2.383E+02
2094	8.512E+03	6.816E+06	4.580E+02	2.274E+03	3.408E+06	2.290E+02
2095	8.178E+03	6.549E+06	4.400E+02	2.185E+03	3.274E+06	2.200E+02
2096	7.858E+03	6.292E+06	4.228E+02	2.099E+03	3.146E+06	2.114E+02
2097	7.550E+03	6.045E+06	4.062E+02	2.017E+03	3.023E+06	2.031E+02
2098	7.254E+03	5.808E+06	3.903E+02	1.937E+03	2.904E+06	1.951E+02
2099	6.969E+03	5.581E+06	3.750E+02	1.862E+03	2.790E+06	1.875E+02
2100	6.696E+03	5.362E+06	3.603E+02	1.789E+03	2.681E+06	1.801E+02
2101	6.433E+03	5.151E+06	3.461E+02	1.718E+03	2.576E+06	1.731E+02
2102	6.181E+03	4.949E+06	3.326E+02	1.651E+03	2.475E+06	1.663E+02
2103	5.939E+03	4.755E+06	3.195E+02	1.586E+03	2.378E+06	1.598E+02
2104	5.706E+03	4.569E+06	3.070E+02	1.524E+03	2.284E+06	1.535E+02
2105	5.482E+03	4.390E+06	2.950E+02	1.464E+03	2.195E+06	1.475E+02
2106	5.267E+03	4.218E+06	2.834E+02	1.407E+03	2.109E+06	1.417E+02
2107	5.061E+03	4.052E+06	2.723E+02	1.352E+03	2.026E+06	1.361E+02
2108	4.862E+03	3.893E+06	2.616E+02	1.299E+03	1.947E+06	1.308E+02
2109	4.672E+03	3.741E+06	2.513E+02	1.248E+03	1.870E+06	1.257E+02
2110	4.488E+03	3.594E+06	2.415E+02	1.199E+03	1.797E+06	1.207E+02
2111	4.312E+03	3.453E+06	2.320E+02	1.152E+03	1.727E+06	1.160E+02
2112	4.143E+03	3.318E+06	2.229E+02	1.107E+03	1.659E+06	1.115E+02
2113	3.981E+03	3.188E+06	2.142E+02	1.063E+03	1.594E+06	1.071E+02
2114	3.825E+03	3.063E+06	2.058E+02	1.022E+03	1.531E+06	1.029E+02
2115	3.675E+03	2.943E+06	1.977E+02	9.816E+02	1.471E+06	9.886E+01
2116	3.531E+03	2.827E+06	1.900E+02	9.431E+02	1.414E+06	9.498E+01
2117	3.392E+03	2.716E+06	1.825E+02	9.061E+02	1.358E+06	9.126E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1977	0	0	0	0	0	0
1978	1.495E+02	8.169E+04	5.489E+00	2.343E+00	6.535E+02	4.391E-02
1979	2.932E+02	1.602E+05	1.076E+01	4.593E+00	1.281E+03	8.610E-02
1980	4.312E+02	2.356E+05	1.583E+01	6.756E+00	1.885E+03	1.266E-01
1981	5.639E+02	3.080E+05	2.070E+01	8.833E+00	2.464E+03	1.656E-01
1982	1.140E+03	6.227E+05	4.184E+01	1.786E+01	4.982E+03	3.347E-01
1983	1.263E+03	6.901E+05	4.637E+01	1.979E+01	5.521E+03	3.710E-01
1984	1.370E+03	7.487E+05	5.030E+01	2.147E+01	5.989E+03	4.024E-01
1985	1.480E+03	8.084E+05	5.431E+01	2.318E+01	6.467E+03	4.345E-01
1986	1.582E+03	8.643E+05	5.807E+01	2.479E+01	6.915E+03	4.646E-01
1987	1.632E+03	8.914E+05	5.989E+01	2.556E+01	7.131E+03	4.791E-01
1988	1.705E+03	9.315E+05	6.259E+01	2.671E+01	7.452E+03	5.007E-01
1989	1.885E+03	1.030E+06	6.920E+01	2.953E+01	8.239E+03	5.536E-01
1990	2.046E+03	1.118E+06	7.510E+01	3.205E+01	8.942E+03	6.008E-01
1991	2.240E+03	1.224E+06	8.223E+01	3.509E+01	9.791E+03	6.578E-01
1992	2.749E+03	1.502E+06	1.009E+02	4.306E+01	1.201E+04	8.072E-01
1993	2.988E+03	1.632E+06	1.097E+02	4.681E+01	1.306E+04	8.774E-01
1994	3.180E+03	1.737E+06	1.167E+02	4.982E+01	1.390E+04	9.339E-01
1995	3.563E+03	1.946E+06	1.308E+02	5.581E+01	1.557E+04	1.046E+00
1996	4.153E+03	2.269E+06	1.525E+02	6.507E+01	1.815E+04	1.220E+00
1997	4.330E+03	2.366E+06	1.590E+02	6.784E+01	1.893E+04	1.272E+00
1998	4.496E+03	2.456E+06	1.650E+02	7.043E+01	1.965E+04	1.320E+00
1999	4.599E+03	2.512E+06	1.688E+02	7.204E+01	2.010E+04	1.350E+00
2000	4.678E+03	2.556E+06	1.717E+02	7.328E+01	2.044E+04	1.374E+00
2001	4.806E+03	2.626E+06	1.764E+02	7.529E+01	2.101E+04	1.411E+00
2002	5.088E+03	2.780E+06	1.868E+02	7.971E+01	2.224E+04	1.494E+00
2003	5.445E+03	2.974E+06	1.999E+02	8.529E+01	2.380E+04	1.599E+00
2004	6.016E+03	3.286E+06	2.208E+02	9.424E+01	2.629E+04	1.767E+00
2005	6.793E+03	3.711E+06	2.494E+02	1.064E+02	2.969E+04	1.995E+00
2006	7.571E+03	4.136E+06	2.779E+02	1.186E+02	3.309E+04	2.223E+00
2007	8.221E+03	4.491E+06	3.017E+02	1.288E+02	3.593E+04	2.414E+00
2008	8.855E+03	4.837E+06	3.250E+02	1.387E+02	3.870E+04	2.600E+00
2009	9.473E+03	5.175E+06	3.477E+02	1.484E+02	4.140E+04	2.782E+00
2010	1.008E+04	5.505E+06	3.699E+02	1.579E+02	4.404E+04	2.959E+00
2011	1.067E+04	5.828E+06	3.916E+02	1.671E+02	4.662E+04	3.133E+00
2012	1.124E+04	6.143E+06	4.127E+02	1.762E+02	4.914E+04	3.302E+00
2013	1.181E+04	6.451E+06	4.335E+02	1.850E+02	5.161E+04	3.468E+00
2014	1.236E+04	6.753E+06	4.537E+02	1.936E+02	5.402E+04	3.630E+00
2015	1.290E+04	7.048E+06	4.736E+02	2.021E+02	5.639E+04	3.789E+00
2016	1.343E+04	7.338E+06	4.930E+02	2.104E+02	5.870E+04	3.944E+00
2017	1.395E+04	7.621E+06	5.121E+02	2.185E+02	6.097E+04	4.097E+00
2018	1.446E+04	7.899E+06	5.308E+02	2.265E+02	6.320E+04	4.246E+00
2019	1.496E+04	8.173E+06	5.491E+02	2.344E+02	6.538E+04	4.393E+00
2020	1.545E+04	8.441E+06	5.671E+02	2.420E+02	6.753E+04	4.537E+00
2021	1.593E+04	8.705E+06	5.849E+02	2.496E+02	6.964E+04	4.679E+00
2022	1.641E+04	8.964E+06	6.023E+02	2.570E+02	7.171E+04	4.818E+00
2023	1.688E+04	9.219E+06	6.194E+02	2.644E+02	7.375E+04	4.955E+00
2024	1.733E+04	9.470E+06	6.363E+02	2.716E+02	7.576E+04	5.090E+00
2025	1.779E+04	9.717E+06	6.529E+02	2.787E+02	7.774E+04	5.223E+00
2026	1.823E+04	9.961E+06	6.693E+02	2.856E+02	7.969E+04	5.354E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2027	1.887E+04	1.020E+07	6.855E+02	2.925E+02	8.161E+04	5.484E+00
2028	1.911E+04	1.044E+07	7.014E+02	2.994E+02	8.351E+04	5.611E+00
2029	1.954E+04	1.067E+07	7.172E+02	3.061E+02	8.539E+04	5.737E+00
2030	1.996E+04	1.091E+07	7.327E+02	3.127E+02	8.725E+04	5.862E+00
2031	2.038E+04	1.113E+07	7.481E+02	3.193E+02	8.908E+04	5.985E+00
2032	2.080E+04	1.136E+07	7.634E+02	3.258E+02	9.089E+04	6.107E+00
2033	2.121E+04	1.159E+07	7.785E+02	3.322E+02	9.269E+04	6.228E+00
2034	2.162E+04	1.181E+07	7.934E+02	3.386E+02	9.447E+04	6.347E+00
2035	2.202E+04	1.203E+07	8.082E+02	3.449E+02	9.623E+04	6.466E+00
2036	2.242E+04	1.225E+07	8.229E+02	3.512E+02	9.798E+04	6.583E+00
2037	2.282E+04	1.246E+07	8.375E+02	3.574E+02	9.972E+04	6.700E+00
2038	2.321E+04	1.268E+07	8.520E+02	3.636E+02	1.014E+05	6.816E+00
2039	2.360E+04	1.289E+07	8.664E+02	3.697E+02	1.032E+05	6.931E+00
2040	2.399E+04	1.311E+07	8.806E+02	3.758E+02	1.049E+05	7.045E+00
2041	2.438E+04	1.332E+07	8.949E+02	3.819E+02	1.065E+05	7.159E+00
2042	2.476E+04	1.353E+07	9.090E+02	3.880E+02	1.082E+05	7.272E+00
2043	2.515E+04	1.374E+07	9.231E+02	3.940E+02	1.099E+05	7.385E+00
2044	2.553E+04	1.395E+07	9.371E+02	4.000E+02	1.116E+05	7.497E+00
2045	2.591E+04	1.416E+07	9.511E+02	4.059E+02	1.132E+05	7.609E+00
2046	2.629E+04	1.436E+07	9.650E+02	4.119E+02	1.149E+05	7.720E+00
2047	2.667E+04	1.457E+07	9.790E+02	4.178E+02	1.166E+05	7.832E+00
2048	2.705E+04	1.478E+07	9.928E+02	4.237E+02	1.182E+05	7.943E+00
2049	2.743E+04	1.498E+07	1.007E+03	4.298E+02	1.199E+05	8.054E+00
2050	2.780E+04	1.519E+07	1.021E+03	4.355E+02	1.215E+05	8.164E+00
2051	2.818E+04	1.539E+07	1.034E+03	4.415E+02	1.232E+05	8.275E+00
2052	2.856E+04	1.560E+07	1.048E+03	4.474E+02	1.248E+05	8.386E+00
2053	2.893E+04	1.581E+07	1.062E+03	4.533E+02	1.265E+05	8.496E+00
2054	2.931E+04	1.601E+07	1.076E+03	4.592E+02	1.281E+05	8.607E+00
2055	2.969E+04	1.622E+07	1.090E+03	4.651E+02	1.297E+05	8.718E+00
2056	2.852E+04	1.558E+07	1.047E+03	4.468E+02	1.247E+05	8.376E+00
2057	2.741E+04	1.497E+07	1.006E+03	4.293E+02	1.198E+05	8.047E+00
2058	2.633E+04	1.438E+07	9.665E+02	4.125E+02	1.151E+05	7.732E+00
2059	2.530E+04	1.382E+07	9.286E+02	3.963E+02	1.106E+05	7.429E+00
2060	2.431E+04	1.328E+07	8.922E+02	3.808E+02	1.062E+05	7.137E+00
2061	2.335E+04	1.276E+07	8.572E+02	3.658E+02	1.021E+05	6.858E+00
2062	2.244E+04	1.226E+07	8.236E+02	3.515E+02	9.806E+04	6.589E+00
2063	2.156E+04	1.178E+07	7.913E+02	3.377E+02	9.421E+04	6.330E+00
2064	2.071E+04	1.132E+07	7.603E+02	3.245E+02	9.052E+04	6.082E+00
2065	1.990E+04	1.087E+07	7.304E+02	3.117E+02	8.697E+04	5.844E+00
2066	1.912E+04	1.045E+07	7.018E+02	2.995E+02	8.356E+04	5.614E+00
2067	1.837E+04	1.004E+07	6.743E+02	2.878E+02	6.028E+04	5.394E+00
2068	1.765E+04	9.642E+06	6.479E+02	2.765E+02	7.714E+04	5.183E+00
2069	1.696E+04	9.264E+06	6.224E+02	2.657E+02	7.411E+04	4.980E+00
2070	1.629E+04	8.901E+06	5.980E+02	2.552E+02	7.121E+04	4.784E+00
2071	1.565E+04	8.552E+06	5.746E+02	2.452E+02	6.841E+04	4.597E+00
2072	1.504E+04	8.216E+06	5.521E+02	2.356E+02	6.573E+04	4.416E+00
2073	1.445E+04	7.894E+06	5.304E+02	2.264E+02	6.315E+04	4.243E+00
2074	1.388E+04	7.585E+06	5.096E+02	2.175E+02	6.068E+04	4.077E+00
2075	1.334E+04	7.287E+06	4.896E+02	2.090E+02	5.830E+04	3.917E+00
2076	1.282E+04	7.002E+06	4.704E+02	2.008E+02	5.601E+04	3.763E+00
2077	1.231E+04	6.727E+06	4.520E+02	1.929E+02	5.382E+04	3.616E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2078	1.183E+04	6.463E+06	4.343E+02	1.853E+02	5.171E+04	3.474E+00
2079	1.137E+04	6.210E+06	4.172E+02	1.781E+02	4.968E+04	3.338E+00
2080	1.092E+04	5.966E+06	4.009E+02	1.711E+02	4.773E+04	3.207E+00
2081	1.049E+04	5.732E+06	3.852E+02	1.644E+02	4.586E+04	3.081E+00
2082	1.008E+04	5.508E+06	3.701E+02	1.579E+02	4.406E+04	2.960E+00
2083	9.686E+03	5.292E+06	3.555E+02	1.517E+02	4.233E+04	2.844E+00
2084	9.307E+03	5.084E+06	3.416E+02	1.458E+02	4.067E+04	2.733E+00
2085	8.942E+03	4.885E+06	3.282E+02	1.401E+02	3.908E+04	2.626E+00
2086	8.591E+03	4.693E+06	3.153E+02	1.346E+02	3.755E+04	2.523E+00
2087	8.254E+03	4.509E+06	3.030E+02	1.293E+02	3.607E+04	2.424E+00
2088	7.931E+03	4.332E+06	2.911E+02	1.242E+02	3.466E+04	2.329E+00
2089	7.620E+03	4.163E+06	2.797E+02	1.194E+02	3.330E+04	2.237E+00
2090	7.321E+03	3.999E+06	2.687E+02	1.147E+02	3.199E+04	2.150E+00
2091	7.034E+03	3.843E+06	2.582E+02	1.102E+02	3.074E+04	2.065E+00
2092	6.758E+03	3.692E+06	2.481E+02	1.059E+02	2.954E+04	1.984E+00
2093	6.493E+03	3.547E+06	2.383E+02	1.017E+02	2.838E+04	1.907E+00
2094	6.238E+03	3.408E+06	2.290E+02	9.773E+01	2.726E+04	1.832E+00
2095	5.994E+03	3.274E+06	2.200E+02	9.390E+01	2.620E+04	1.760E+00
2096	5.759E+03	3.146E+06	2.114E+02	9.021E+01	2.517E+04	1.691E+00
2097	5.533E+03	3.023E+06	2.031E+02	8.668E+01	2.418E+04	1.625E+00
2098	5.316E+03	2.904E+06	1.951E+02	8.328E+01	2.323E+04	1.561E+00
2099	5.108E+03	2.790E+06	1.875E+02	8.001E+01	2.232E+04	1.500E+00
2100	4.907E+03	2.681E+06	1.801E+02	7.688E+01	2.145E+04	1.441E+00
2101	4.715E+03	2.576E+06	1.731E+02	7.386E+01	2.061E+04	1.385E+00
2102	4.530E+03	2.475E+06	1.663E+02	7.097E+01	1.980E+04	1.330E+00
2103	4.352E+03	2.378E+06	1.598E+02	6.818E+01	1.902E+04	1.278E+00
2104	4.182E+03	2.284E+06	1.535E+02	6.551E+01	1.828E+04	1.228E+00
2105	4.018E+03	2.195E+06	1.475E+02	6.294E+01	1.756E+04	1.180E+00
2106	3.860E+03	2.109E+06	1.417E+02	6.047E+01	1.687E+04	1.134E+00
2107	3.709E+03	2.026E+06	1.361E+02	5.810E+01	1.621E+04	1.089E+00
2108	3.563E+03	1.947E+06	1.308E+02	5.582E+01	1.557E+04	1.046E+00
2109	3.424E+03	1.870E+06	1.257E+02	5.363E+01	1.496E+04	1.005E+00
2110	3.289E+03	1.797E+06	1.207E+02	5.153E+01	1.438E+04	9.659E-01
2111	3.160E+03	1.727E+06	1.160E+02	4.951E+01	1.381E+04	9.281E-01
2112	3.037E+03	1.659E+06	1.115E+02	4.757E+01	1.327E+04	8.917E-01
2113	2.917E+03	1.594E+06	1.071E+02	4.570E+01	1.275E+04	8.567E-01
2114	2.803E+03	1.531E+06	1.029E+02	4.391E+01	1.225E+04	8.231E-01
2115	2.693E+03	1.471E+06	9.886E+01	4.219E+01	1.177E+04	7.908E-01
2116	2.588E+03	1.414E+06	9.498E+01	4.054E+01	1.131E+04	7.598E-01
2117	2.486E+03	1.358E+06	9.126E+01	3.895E+01	1.087E+04	7.300E-01

APPENDIX B

EMISSIONS CALCULATIONS

Total Emissions from the Anderson Landfill Facility

Pollutant	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10*	3.7	49.6
CO	67.2	30.7
NO _x	22.4	7.8
SO ₂	4.9	1.70
VOC	8.6	2.4
NMOC	20.4	5.4
HAPs	4.4	2.4
TOTAL:	131.6	100.0

*Note: The total actual emissions of PM-10 include fugitive emissions from the MSW Landfill operations. Fugitive emissions are not required to be included in potential emissions which are used to determine applicability to the Title V program.

Standard Inputs and Calculations
Anderson Landfill
Anderson, CA

Category	Value	Equivalent
Standard Temperature ^a	60 °F	520 °R
Universal Gas Constant	0.7302 atm·ft ³ /lb·mol·R	
Pressure ^b	1 atm	
Methane Heating Value ^c	1,000 Btu/ft ³	
LFG Methane Component ^c	55%	
LFG Typical Heating Value	550 Btu/ft ³	
LFG Temperature ^c	100 °F	560 °R
LFG Moisture ^c	8%	
Methane Combustion Constant ^d	9.53 ft ³ air/ft ³ CH ₄	

^aIndustrial STP (60°F, 30.00 in. Hg, 1 atm)

^bTypical

^cAssumed

^d*Professional Engineering Registration Program*, 23-9.

Operating Parameters - Inputted and Calculated

Flare Information	Value	Equivalent	
Operation Period ^e	8,760 hr		
LFG inlet flow, standard ^f	1,500 scfm	90,000 scf/hr	500 scfm, current
		2,160,000 scf/day	30000 scf/hr, current
		788,400,000 scf/yr	
LFG Inlet Flow, dry standard	1,380 dscfm		
Heat Input	49.50 MMBtu/hr		
Design Flare Operating Temperature ^c	1,400 °F	1,860 °R	
Excess Air for Combustion ^f	230%		
Exhaust Flow, standard	27,445 scfm		
Exhaust Flow, actual	98,170 acfm		
Exit Diameter ^c	8.0 ft		
Exhaust Velocity	1,953 ft/min	32.6 ft/s	
Height ^c	40 ft		

^eWorst-case/default = 8760 hours. Actual hours (needed for emission statement purposes/operating limitations) from flare operator

^fFlare manufacturer

^cFunction of design flame temperature; values are typical and are provided for 1400°F, 1600°F, 1800°F, and 2000°F, obtain actual values from a flare manufacturer

Equipment List

Anderson Landfill

Emission Unit ID	Control Device/ Emission Point ID	Equipment/Source	Size/ Capacity	Alternate Size/ Capacity	Units	Actual Usage	Units	Year Comments
LF-1	LF-1	Municipal Solid Waste Landfill Enclosed Landfill Gas Flare PW-1	16,363,000 12,502,752	9,270,446 m3	Mg			NSW Landfill NSPS/EG Applicable; 1,700 lbs/yr/c3 density of in-place waste assumed
LF-1	Flare-1	Pressure Washer	1,500	1.500	scfm			LFG Specialties Enclosed Landfill Gas Flare - Model No. EF84016
LF-1	Tank-1	Tank	10,000	13	Hp	200	hours	Honda: 2X3600 Model
LF-1	Tank-2	Tank	550	550	gallons	360,000	gallons	Diesel Fuel
LF-1	Tank-3	Tank	650	650	gallons	18,000	gallons	Gasoline
LF-1	Tank-4	Tank	350	350	gallons	6,000	gallons	Oil
LF-1	Tank-5	Tank	850	850	gallons	4,200	gallons	Used Oil
LF-1	Comp-1	Compressor	13	13	Hp	4,000	gallons	Hydraulic Oil
LF-1	Comp-2	Compressor	11	11	Hp			Gasoline: Ingersoll Rand 2476
LF-1	Gen-1	Generator	kw	kw	kw			Gasoline: Quincy with Kohler engine
LF-1	Gen-2	Generator	5.5	5.5	kw			Gasoline: Miller Bobcat 225 Generator/Maddder w/Kohler Engine
LF-1	Gen-3	Generator	8.5	8.5	kw			Gasoline: Generac 5550 Model w/airbags & vibration engine
LF-1	Gen-4	Generator	kw	kw	kw			Diesel: North Star
LF-1	Gen-5	Generator	3	3	kw			Gasoline: Miller 300SS Model w/Open engine
LF-1		Welding (rods)			kw			Gasoline: Powermate with Tecumseh engine
LF-1	Pump-1	Water Pump	24	kw	93	200	hours	Milermatic 200
LF-1	Pump-2	Water Pump	6	kw	33	200	hours	Diesel: Caterpillar Model 3304b
LF-1	Pump-3	Water Pump	6	kw	11	200	hours	each Diesel: Three (3) 6 inch pumps - (2) Perkins, (1) John Deere
LF-1	Pump-4	Water Pump	6	kw	8	200	hours	each Gasoline: Three (3) 3 inch pumps - Honda WT30x models
LF-1	Engine-1	Tipper Engine		130	hp	1,473	hours/day	Gasoline: Honda WT20x model
								Diesel: Caterpillar engine model 3054

Criteria Pollutants Emissions Calculations
 Anderson Landfill
 Anderson, CA

Operation Period	8,760 hr		
LFG inlet flow, standard	1,500 scfm, max.	700 scfm, actual	
Heat Input	49.5 MMBtu/hr		

SO₂ Emission Rate			
SO ₂ concentration in exhaust gas	49.60 ppmv		
SO ₂ emission rate	0.75 lb/hr	3.3 ton/yr, max.	
		1.54 ton/yr, actual	

Sulfur Compound	CAS	MW (lb/lb-mol)	Conc (ppmv)	Control Eff ^a	Individual Compound Contribution to SO ₂		
					No. of S Atoms	Conc (ppmv)	Emiss (lb/hr)
Carbon Disulfide	75-15-0	76.13	0.58	99.7%	2	1.16	0.02
Carbonyl Sulfide	463-58-1	60.07	0.49	99.7%	1	0.49	0.01
Dimethyl Sulfide (methyl sulfide)	75-18-3	62.13	7.82	99.7%	1	7.80	0.12
Ethyl Mercaptan (ethanethiol)	75-08-1	62.13	2.28	99.7%	1	2.27	0.03
Hydrogen Sulfide	7783-06-4	34.08	35.50	99.7%	1	35.4	0.54
Methyl Mercaptan	74-93-1	48.11	2.49	99.7%	1	2.48	0.04
PM/PM₁₀ Emission Rate					Total Contribution to SO₂: 49.60 0.75		
PM emission factor ^{b,d}		17 lb/MM dscf CH ₄					
PM emission rate		0.77 lb/hr		3.4 ton/yr, max.			
				1.6 ton/yr, actual			
NO_x Emission Rate							
NO _x emission factor ^e		0.06 lb/MMBtu					
NO _x emission rate		3.0 lb/hr		13.0 ton/yr, max.			
CO Emission Rate							
CO emission factor ^f		0.30 lb/MMBtu					
CO emission rate		14.9 lb/hr		65.0 ton/yr, max.			
				30.4 ton/yr, actual			
NMOC Emission Rate							
NMOC conc inlet gas ^g		595 ppmv					
MW hexane		86.18 lb/lb-mol					
destruction efficiency		98%					
mass NMOC inlet gas		12.2 lb/hr					
NMOC emission rate		0.24 lb/hr		1.06 ton/yr, max.			
				0.5 ton/yr, actual			
VOC Emission Rate							
NMOC conc inlet gas ^g		595 ppmv					
VOC fraction of NMOC ^h		39%					
VOC concentration in inlet gas		232 ppmv					
MW hexane		86.18 lb/lb-mol					
mass VOC inlet gas		4.7 lb/hr					
destruction efficiency		98%					
VOC emission rate		0.09 lb/hr		0.42 ton/yr, max.			
				0.2 ton/yr, actual			

^aU.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources ("AP-42")*, 5th Ed., November 1998.
 Tables 2.4-1, 2.4-2, 2.4-3, 2.4-5.

^bAP-42 gives ranges for control efficiencies. Control efficiencies for halogenated species range from 91 to 99.7 percent. The upper end of the range is used here resulting in maximum calculated emissions of SO₂.

^cEmission factor required in Authority to Construct 06-PO-06.

^dFrom AP-42 Table 2.4-5, No data on PM size distributions were available, however for other gas-fired combustion sources, most of the particulate matter is less than 10 microns in diameter. But, to be conservative all particulate emissions assumed to be PM and PM10.

Hazardous Air Pollutant Emission Calculations

Anderson Landfill

Anderson, CA

LFG inlet flow 1,500 scfm

LFG Compound	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas		Control Eff ^{a,b}	Flare Exhaust	
					(ppmv) ^c	(lb/hr)		lb/hr	ton/yr
1,1,1 - Trichloroethane (methyl chloroform)	x	-	71-55-6	133.41	0.168	5.31E-03	98.0%	1.06E-04	4.65E-04
1,1,2,2 - Tetrachloroethane	x	x	79-34-5	167.85	0.005	1.99E-04	98.0%	3.98E-06	1.74E-05
1,1,2 - Trichloroethane (1,1,2 TCA)*	x	x	79-00-5	133.41	0.10	3.16E-03	98.0%	6.32E-05	2.77E-04
1,1 - Dichloroethane (ethylidene dichloride)	x	x	75-34-3	98.96	0.741	1.74E-02	98.0%	3.48E-04	1.52E-03
1,1 - Dichloroethene (vinylidene chloride)	x	x	75-35-4	96.94	0.092	2.11E-03	98.0%	4.23E-05	1.85E-04
1,2 - Dichloroethane (ethylene dichloride)	x	x	107-06-2	98.96	0.120	2.81E-03	98.0%	5.63E-05	2.47E-04
1,2 - Dichloropropane (propylene dichloride)	x	x	78-87-5	112.99	0.023	6.16E-04	98.0%	1.23E-05	5.40E-05
2-Propanol (isopropyl alcohol)	-	y	67-63-0	60.11	7.908	1.13E-01	98.0%	2.25E-03	9.87E-03
Acetone (2-propanone)	-	-	67-64-1	58.08	7.075	9.74E-02	98.0%	1.95E-03	8.53E-03
Acrylonitrile (Propenenitrile)	x	x	107-13-1	53.06	0.036	4.53E-04	98.0%	9.06E-06	3.97E-05
Benzene	x	x	71-43-2	78.12	0.972	1.80E-02	98.0%	3.60E-04	1.58E-03
Bromodichloromethane	-	y	75-27-4	163.83	0.264	1.03E-02	98.0%	2.05E-04	8.98E-04
Butane	-	y	106-97-8	58.12	5.030	6.93E-02	98.0%	1.39E-03	6.07E-03
Carbon Disulfide	x	x	75-15-0	76.14	0.221	3.99E-03	98.0%	7.98E-05	3.49E-04
Carbon Tetrachloride	x	x	56-23-5	153.84	0.007	2.55E-04	98.0%	5.10E-06	2.24E-05
Carbonyl Sulfide	x	x	463-58-1	60.07	0.183	2.61E-03	98.0%	5.21E-05	2.28E-04
Chlorobenzene (monochlorobenzene)	x	x	108-90-7	112.56	0.227	6.06E-03	98.0%	1.21E-04	5.31E-04
Chlorodifluoromethane (CFC-22, freon-22)	--	-	75-45-6	86.47	0.355	7.28E-03	98.0%	1.46E-04	6.37E-04
Chloroethane (ethyl chloride)	x	x	75-00-3	64.52	0.448	6.85E-03	98.0%	1.37E-04	6.00E-04
Chloroform (trichloromethane)	x	x	67-66-3	119.38	0.010	2.83E-04	98.0%	5.66E-06	2.48E-05
Chloromethane (methyl chloride)	x	x	74-87-3	50.49	0.136	1.63E-03	98.0%	3.26E-05	1.43E-04
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	106-46-7	147	1.448	5.05E-02	98.0%	1.01E-03	4.42E-03
Dichlorodifluoromethane (CFC-12, freon-12)	-	-	75-71-8	120.91	0.964	2.76E-02	98.0%	5.53E-04	2.42E-03
Dichlorofluoromethane (freon-21)	-	-	75-43-4	102.92	2.620	6.39E-02	98.0%	1.28E-03	5.60E-03
Dichloromethane (methylene chloride)	x	-	75-09-2	84.93	3.395	6.83E-02	98.0%	1.37E-03	5.99E-03
Dimethyl Sulfide (methyl sulfide)	-	y	75-18-3	62.13	6.809	1.00E-01	98.0%	2.01E-03	8.78E-03
Ethane	-	-	74-84-0	30.07	7.943	5.66E-02	98.0%	1.13E-03	4.96E-03
Ethanol (ethyl alcohol)	-	y	64-17-5	46.08	64.425	7.04E-01	98.0%	1.41E-02	6.16E-02
Ethylbenzene*	x	x	100-41-4	106.17	6.789	1.71E-01	98.0%	3.42E-03	1.50E-02
Ethyl Mercaptan (ethanethiol)	--	y	75-08-1	62.13	0.226	3.33E-03	98.0%	6.66E-05	2.92E-04
Ethylene dibromide (1,2 dibromoethane)	x	x	106-93-4	187.88	0.005	2.23E-04	98.0%	4.45E-06	1.95E-05
Fluorotrifluoromethane (CFC-11, freon-11)	--	-	75-69-4	137.37	0.327	1.06E-02	98.0%	2.13E-04	9.33E-04
Hexane	x	x	110-54-3	86.18	2.063	4.21E-02	98.0%	8.43E-04	3.69E-03
Hydrogen Sulfide	-	-	7783-06-4	34.08	23.578	1.90E-01	98.0%	3.81E-03	1.67E-02
Mercury (total)	x	-	7439-97-6	200.61	2.92E-04	1.39E-05	0.0%	1.39E-05	6.08E-05
Methyl Ethyl Ketone (2-butanone)	x	x	78-93-3	72.11	12.694	2.17E-01	98.0%	4.34E-03	1.90E-02
Methyl Isobutyl Ketone (hexone)	x	x	108-10-1	100.16	0.750	1.78E-02	98.0%	3.56E-04	1.56E-03
Methyl Mercaptan	-	y	74-93-1	48.11	1.266	1.44E-02	98.0%	2.89E-04	1.26E-03
Pentane	-	y	109-66-0	72.15	3.290	5.63E-02	98.0%	1.13E-03	4.93E-03
Tetrachloroethylene (perchloroethylene, -ethene)	x	x	127-18-4	165.83	1.193	4.69E-02	98.0%	9.38E-04	4.11E-03
Propane	-	y	74-98-6	44.1	19.858	2.08E-01	98.0%	4.15E-03	1.82E-02
Toluene (methylbenzene)	x	x	108-88-3	92.14	25.405	5.55E-01	98.0%	1.11E-02	4.86E-02
Trichloroethylene (trichloroethene)	x	x	79-01-6	131.38	0.681	2.12E-02	98.0%	4.24E-04	1.86E-03
1 - 1,2 - Dichloroethene (1,2 dichloroethylene)	-	-	156-60-5	96.94	0.051	1.17E-03	98.0%	2.34E-05	1.03E-04
Vinyl Chloride (chloroethylene, VCM)	x	x	75-01-4	62.50	1.077	1.60E-02	98.0%	3.19E-04	1.40E-03
Xylenes (m. o. p.)	x	x	1330-20-7	106.17	16.582	4.17E-01	98.0%	8.35E-03	3.66E-02
Hydrogen Chloride*	x	-	7647-01-0	36.50	42.0	3.63E-01	0.0%	3.63E-01	1.59E+00
						Total HAP	0.40	1.7	
						Maximum Single HAP	0.36	1.59	
						VOC (Non-HAP)	0.03	0.11	

^aU.S. E.P.A., *Compilation of Air Pollution Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 5th Ed., November 1998.

Tables 2.4-1, 2.4-2, 2.4-3.

^bAP-42 gives ranges for control efficiencies. Control efficiencies for permitting purposes has been chosen to be the NSPS-required control efficiency for NMOC of 98%.^cProduct of combustion^dBecause HCl is a product of combustion, a default outlet concentration is listed: AP-42, Section 2.4.4.

Note: "x" denotes a HAP only or a HAP and VOC; "y" denotes a VOC only

^eSource: Waste Industry Air Coalition (WIAC) Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values, January 2001

Generator Emissions

Anderson Landfill

Equipment ID: Gen-1

0 kV
kW
23.0 Hp

Potential annual operating hours
Actual annual operating hours

Cassine: Miller Bobcat 225 Generator/Welder w/Kohler En-

8,760
200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.07	0.044
CO	0.0035	0.55	0.349
NO _x	0.024	2.42	1.52
SO ₂	0.00809*S	0.4	0.144
TNMOC	0.00064	0.06	0.041

Equipment ID: Gen-5

3 kW
4.0 Hp

Gasoline: Powermate with Tecumseh engine

Potential annual operating hours
Actual annual operating hours

8,760
200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.01	0.000
CO	0.0035	0.10	0.002
NO _x	0.024	0.42	0.010
SO ₂	0.00809*S	0.1	0.002
TNMOC	0.00064	0.01	0.000

Equipment ID: Gen-2

5.5 kV
5.5 kW
7.4 Hp, each

Number of Generators*
Potential annual operating hours
Actual annual operating hours

Gasoline: Generac 5550 Model w/Briggs & Stratton engine

2
8,760
200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.05	0.001
CO	0.0035	0.36	0.008
NO _x	0.024	1.55	0.035
SO ₂	0.00809*S	0.3	0.003
TNMOC	0.00064	0.04	0.001

Equipment ID: PW-1

13.0 Hp

Honda: ZR3600 Model

Potential annual operating hours
Actual annual operating hours

8,760
200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.04	0.001
CO	0.0035	0.31	0.007
NO _x	0.024	1.37	0.031
SO ₂	0.00809*S	0.2	0.005
TNMOC	0.00064	0.04	0.001

Equipment ID: Gen-3

6.5 kW
8.7 Hp, each

Number of Generators*

Potential annual operating hours

Diesel: North Star

3
8,760
200

Pollutant	Emission Factor (lb/Min-Hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.08	0.002
CO	0.0035	0.63	0.014
NO _x	0.024	2.75	0.063
SO ₂	0.00809*S	0.5	0.006
TNMOC	0.00064	0.07	0.002

Equipment ID: Gen-4

0 kW
8.5 Hp

Gasoline: Miller 300SS Model w/Omn engine

Potential annual operating hours
Actual annual operating hours

8,760
200

Pollutant	Emission Factor (lb/Min-Hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.03	0.001
CO	0.0035	0.20	0.005
NO _x	0.024	0.89	0.020
SO ₂	0.00809*S	0.2	0.002
TNMOC	0.00064	0.02	0.001

Hazardous Air Pollutants

Pollutant	Emission Factor (lb/MWhBtu)	Equipment ID: Gen-1		Equipment ID: Gen-2		Equipment ID: Gen-3	
		Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
Acetaldehyde	2.52E-05	6.65E-06	1.98E-07	2.78E-06	6.34E-08	3.28E-06	7.30E-08
Acrolein	7.88E-06	2.71E-06	6.19E-08	8.69E-07	4.60E-07	1.03E-06	2.34E-08
Benzene	7.76E-04	2.67E-04	6.09E-06	8.53E-05	4.51E-05	1.01E-04	2.31E-06
Formaldehyde	7.89E-05	2.71E-05	6.19E-07	8.70E-06	4.60E-06	1.03E-05	2.35E-07
Naphthalene	1.30E-04	4.47E-05	1.02E-06	1.43E-05	7.59E-06	1.69E-05	3.87E-07
Toluene	2.81E-04	9.66E-05	2.21E-06	3.10E-05	1.64E-05	1.66E-05	8.36E-07
Xylene	1.91E-04	6.64E-05	1.52E-06	2.13E-05	1.10E-05	2.51E-05	5.74E-07
Total	5.13E-04	1.17E-05	1.64E-04	8.57E-05	1.94E-04	4.44E-05	

Pollutant	Emission Factor (lb/MWhBtu)	Equipment ID: Gen-4		Equipment ID: Gen-5		Pressure Washer - 1	
		Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
Acetaldehyde	2.52E-05	3.20E-06	7.31E-08	1.52E-06	3.46E-08	4.90E-06	1.12E-07
Acrolein	7.88E-06	1.00E-06	2.29E-08	4.74E-07	1.08E-08	1.53E-06	3.50E-08
Benzene	7.76E-04	9.85E-05	2.25E-06	4.67E-05	1.07E-06	1.51E-04	3.44E-06
Formaldehyde	7.89E-05	1.00E-05	2.29E-07	4.74E-06	1.08E-07	1.53E-05	3.50E-07
Naphthalene	1.30E-04	1.65E-05	3.77E-07	7.82E-06	1.78E-07	2.51E-05	5.77E-07
Toluene	2.81E-04	3.57E-05	8.15E-07	1.69E-05	3.86E-07	5.46E-05	1.25E-06
Xylene	1.91E-04	2.45E-05	5.60E-07	1.16E-05	2.65E-07	3.75E-05	8.56E-07
Total	1.90E-04	4.33E-06	8.97E-05	2.05E-06	2.90E-04	6.62E-06	

Total Emissions from Generators

Pollutant	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.27	0.05
CO	2.15	0.39
NO _x	9.40	1.58
SO ₂	1.59	0.16
TNMOC	0.25	0.04
HAPs	1.44E-03	1.15E-04

Emission factors for No. 2 fuel combustion in generators were obtained from USEPA, AF-42, Fifth Edition, Chapter 24, October 1994.
S = sulfur content. For No. 2 fuel oil, the sulfur content = 0.5 wt% w/o = projected base and 0.75 wt% as actual average base.

Pump and Engine Emissions

Anderson Landfill

Equipment ID: Pump-1

Diesel: Caterpillar Model 3304b

0 kW	
93.0 Hp	45552 gallon/yr
5.2 gal/hr fuel usage	1040 gallon/yr
Potential annual operating hours	8,760
Actual annual operating hours	200
Daily Operating hours (maximum)	11

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (lbs/day)
PM-10	0.0007	0.29	0.007	0.72
CO	0.0055	2.24	0.051	5.63
NO _x	0.024	9.78	0.22	24.55
SO ₂	0.00809 ^S	1.6	0.021	4.14
TNMOC	0.00064	0.26	0.006	0.66

Equipment ID: Pump-4

Gasoline: Honda WT20x model

6 kW	
8.0 Hp	
Potential annual operating hours	8,760
Actual annual operating hours	200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.02	0.00
CO	0.0055	0.19	0.00
NO _x	0.024	0.85	0.02
SO ₂	0.00809 ^S	0.1	0.002
TNMOC	0.00064	0.02	0.001

Equipment ID: Pump-2

Diesel: Three (3) 6 inch pumps - (2) Perkins, (1) John Deere

24.4 kW	
32.7 Hp	
Number of Pumps:	3
Potential annual operating hours	8,760
Actual annual operating hours	200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.30	0.01
CO	0.0055	2.36	0.05
NO _x	0.024	10.32	0.24
SO ₂	0.00809 ^S	1.7	0.02
TNMOC	0.00064	0.28	0.01

Equipment ID: Engine-1

kV_a

0 kW	
130.0 Hp	45552 gallon/yr
5.2 gal/hr fuel usage	7659.6 gallon/yr
Potential annual operating hours	8,760
Actual annual operating hours	1,473 (2006 Actual)
Daily Operating hours (maximum)	8 hrs/day

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (lbs/day)
PM-10	0.0007	0.40	0.067	0.73
CO	0.0055	3.13	0.527	5.72
NO _x	0.024	13.67	2.298	24.96
SO ₂	0.00809 ^S	2.3	0.387	4.21
TNMOC	0.00064	0.37	0.061	0.67

Equipment ID: Pump-3

8 kW

10.7 Hp	Gasoline: Three (3) 3 inch pumps - Honda WT30x models
Number of Pumps:	3
Potential annual operating hours	8,760
Actual annual operating hours	200

Pollutant	Emission Factor (lb/hp-hr)	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	0.0007	0.10	0.00
CO	0.0055	0.78	0.02
NO _x	0.024	3.38	0.08
SO ₂	0.00809 ^S	0.6	0.01
TNMOC	0.00064	0.09	0.00

Hazardous Air Pollutants

	Equipment ID:	Pump-1	Equipment ID:	Pump-2	Equipment ID:	Pump-3	Equipment ID:	Pump-4	Equipment ID:	Engine-1
Pollutant	Emission Factor (lb/MMBtu)	Potential Emissions (tons/year)	Actual Emissions (tons/year)	Potential Emissions (tons/year)						
Acetaldehyde	2.52E-05	3.50E-05	8,00E-07	1.23E-05	2.81E-07	1.28E-07	2.93E-09	3.03E-06	6.92E-08	4.90E-05
Acrolein	7.88E-06	1.10E-05	2.50E-07	3.85E-06	4.60E-07	4.01E-08	9.16E-10	9.48E-07	2.16E-08	1.53E-05
Benzene	7.76E-04	1.08E-03	2.46E-05	3.79E-04	4.53E-05	3.95E-06	9.02E-08	9.33E-05	2.13E-06	1.51E-03
Formaldehyde	7.89E-05	1.10E-04	2.50E-06	3.86E-05	4.60E-06	4.02E-07	9.17E-09	9.49E-06	2.17E-07	1.53E-04
Naphthalene	1.30E-04	1.81E-04	4.13E-06	6.36E-05	7.59E-06	6.62E-07	1.51E-08	1.56E-05	3.57E-07	2.58E-05
Toluene	2.81E-04	3.91E-04	8.92E-06	1.37E-04	1.64E-05	1.43E-06	3.27E-08	3.38E-05	7.71E-07	5.46E-04
Xylene	1.93E-04	2.68E-04	6.13E-06	9.44E-05	1.13E-05	9.82E-07	2.24E-08	2.32E-05	5.30E-07	3.75E-04
Total		2.07E-03	4.74E-05	7.30E-04	8.59E-05	7.59E-06	1.73E-07	1.79E-04	4.10E-06	2.90E-03
										4.88E-04

Total Emissions from Pumps and Engines

Pollutant	Potential Emissions (tons/year)	Actual Emissions (tons/year)
PM-10	1.11	0.08
CO	8.71	0.65
NO _x	37.99	2.85
SO ₂	6.59	0.44
TNMOC	1.02	0.08
HAPs	5.89E-03	6.25E-04

Emissions factors for No. 2 fuel oil combustion in generators were obtained from USEPA, AP-42, Fifth Edition, Chapter 3 4, October 1996.
S = sulfur content. For No. 2 fuel oil, the sulfur content is 0.5 wt% on a potential basis and 0.38 wt% on an actual average basis.

ANNUAL REFUSE INFLOW DATA

YEAR	Waste Accepted (Mg/year)	(short tons/year)	Waste-In-Place (Mg)	(short tons)
1977	20,792.00	22,871.20	-	-
1978	20,792.00	22,871.20	20,792.00	22,871.20
1979	20,792.00	22,871.20	41,584.00	45,742.40
1980	20,792.00	22,871.20	62,376.00	68,613.60
1981	83,166.00	91,482.60	83,168.00	91,484.80
1982	23,373.00	25,710.30	166,334.00	182,967.40
1983	21,785.00	23,963.50	189,707.00	208,677.70
1984	22,667.00	24,933.70	211,492.00	232,641.20
1985	22,312.00	24,543.20	234,159.00	257,574.90
1986	15,520.00	17,072.00	256,471.00	282,118.10
1987	19,093.00	21,002.30	271,991.00	299,190.10
1988	34,347.00	37,781.70	291,084.00	320,192.40
1989	32,648.00	35,912.80	325,431.00	357,974.10
1990	38,148.00	41,962.80	358,079.00	393,886.90
1991	82,918.00	91,209.80	396,227.00	435,849.70
1992	48,234.00	53,057.40	479,145.00	527,059.50
1993	43,054.00	47,359.40	527,379.00	580,116.90
1994	70,522.00	77,574.20	570,433.00	627,476.30
1995	101,557.00	111,712.70	640,955.00	705,050.50
1996	47,258.00	51,983.80	742,512.00	816,763.20
1997	46,625.00	51,287.50	789,770.00	868,747.00
1998	38,807.00	42,687.70	836,395.00	920,034.50
1999	36,082.00	39,690.20	875,202.00	962,722.20
2000	43,333.00	47,666.30	911,284.00	1,002,412.40
2001	65,455.00	72,000.50	954,617.00	1,050,078.70
2002	77,273.00	85,000.30	1,020,072.00	1,122,079.20
2003	109,091.00	120,000.10	1,097,345.00	1,207,079.50
2004	140,909.00	154,999.90	1,206,436.00	1,327,079.60
2005	145,136.00	159,649.60	1,347,345.00	1,482,079.50
2006	131,659.00	144,824.90	1,492,481.00	1,641,729.10
2007	132,976.00	146,273.60	1,624,140.00	1,786,554.00
2008	134,305.76	147,736.34	1,757,116.00	1,932,827.60
2009	135,648.82	149,213.70	1,891,421.76	2,080,563.94
2010	137,005.31	150,705.84	2,027,070.58	2,229,777.64
2011	138,375.36	152,212.89	2,164,075.88	2,380,483.47
2012	139,759.11	153,735.02	2,302,451.24	2,532,696.37
2013	141,156.70	155,272.37	2,442,210.35	2,686,431.39
2014	142,568.27	156,825.10	2,583,367.06	2,841,703.76
2015	143,993.95	158,393.35	2,725,935.33	2,998,528.86
2016	145,433.89	159,977.28	2,869,929.28	3,156,922.21
2017	146,888.23	161,577.05	3,015,363.17	3,316,899.49
2018	148,357.11	163,192.83	3,162,251.41	3,478,476.55
2019	149,840.69	164,824.75	3,310,608.52	3,641,669.37
2020	151,339.09	166,473.00	3,460,449.21	3,806,494.13
2021	152,852.48	168,137.73	3,611,788.30	3,972,967.13
2022	154,381.01	169,819.11	3,764,640.78	4,141,104.86
2023	155,924.82	171,517.30	3,919,021.79	4,310,923.97
2024	157,484.07	173,332.47	4,074,946.61	4,482,441.27
2025	159,058.91	174,964.80	4,232,430.67	4,655,673.74
2026	160,649.50	176,714.45	4,391,489.58	4,830,638.54
2027	162,255.99	178,481.59	4,552,139.08	5,007,352.98
2028	163,878.55	180,266.41	4,714,395.07	5,185,834.57
2029	165,517.34	182,069.07	4,878,273.62	5,366,100.98
2030	167,172.51	183,889.76	5,043,790.95	5,548,170.05
2031	168,844.23	185,728.66	5,210,963.46	5,732,059.81
2032	170,532.68	187,585.94	5,379,807.70	5,917,788.47
2033	172,231.00	189,461.80	5,550,340.37	6,105,374.41
2034	173,960.38	191,356.42	5,722,578.38	6,294,836.22
2035	175,699.99	193,269.99	5,896,538.76	6,486,192.64
2036	177,456.99	195,202.69	6,072,238.75	6,679,462.62
2037	179,231.56	197,154.71	6,249,695.74	6,874,665.31
2038	181,023.87	199,126.26	6,428,927.29	7,071,820.02
2039	182,834.11	201,117.52	6,609,951.17	7,270,946.28
2040	184,662.45	203,128.70	6,792,785.28	7,472,063.81
2041	186,509.08	205,159.99	6,977,447.73	7,675,192.50
2042	188,374.17	207,211.58	7,163,956.81	7,880,352.49
2043	190,257.91	209,283.70	7,352,330.98	8,087,564.07
2044	192,160.49	211,376.54	7,542,588.89	8,296,847.78
2045	194,082.09	213,490.30	7,734,749.38	8,508,224.31
2046	196,022.91	215,625.21	7,928,831.47	8,721,714.62
2047	197,983.14	217,781.46	8,124,854.38	8,937,339.82
2048	199,962.98	219,959.27	8,322,837.53	9,155,121.28
2049	201,962.61	222,158.87	8,522,800.50	9,375,080.55
2050	203,982.23	224,380.45	8,724,763.11	9,597,239.42
2051	206,022.05	226,624.26	8,928,745.34	9,821,619.87
2052	208,082.27	228,890.50	9,134,767.39	10,048,244.13
2053	210,163.10	231,179.41	9,342,849.67	10,277,134.63
2054	212,244.24	233,468.66	9,553,012.76	10,508,314.04
2055	-	-	9,765,257.00	10,741,782.70
2056	-	-	9,765,257.00	10,741,782.70

Landfill Gas Flow Determination
Anderson Landfill

<u>Landfill Gas (scfm)</u>	<u>Maximum Flow (scfm)</u>
1977	-
1978	11.0
1979	21.5
1980	31.7
1981	41.4
1982	63.7
1983	92.7
1984	100.6
1985	108.6
1986	116.1
1987	119.8
1988	125.2
1989	138.4
1990	150.2
1991	164.5
1992	201.8
1993	219.3
1994	233.5
1995	261.6
1996	304.9
1997	317.9
1998	330.1
1999	337.6
2000	343.4
2001	352.8
2002	373.6
2003	399.7
2004	441.6
2005	498.7
2006	555.8
2007	603.5
2008	650.0
2009	695.5
2010	739.8
2011	783.1
2012	825.5
2013	866.9
2014	907.4
2015	947.1
2016	986.0
2017	1,024.1
2018	1,061.5
2019	1,098.2
2020	1,134.3
2021	1,169.7
2022	1,204.5
2023	1,238.8
2024	1,272.6
2025	1,305.8
2026	1,338.6
2027	1,370.9
2028	1,402.8
2029	1,434.4
2030	1,465.5
2031	1,496.3
2032	1,526.8
2033	1,556.9
2034	1,586.8
2035	1,616.5
2036	1,645.8
2037	1,675.0
2038	1,703.9
2039	1,732.7
2040	1,761.3
2041	1,789.7
2042	1,818.0
2043	1,846.2
2044	1,874.2
2045	1,902.2
2046	1,930.1
2047	1,957.9
2048	1,985.7
2049	2,013.4
2050	2,041.1
2051	2,068.7
2052	2,096.4
2053	2,124.0
2054	2,151.7
2055	2,179.4
2056	2,093.9
2057	2,011.8
2058	1,933.0
2059	1,857.2
2060	1,784.3

Modeled Landfill Gas Emissions

Anderson Landfill

Maximum Year LFG fugitive flow 545 std ft³/min Assumes 75% Collection Efficiency per EPA AP-42 Section 2.4
 2006 LFG Fugitive Flow 139 std ft³/min Assumes 75% Collection Efficiency per EPA AP-42 Section 2.4

LFG Compound	H A P	CAS	MW (lb/lb-mol)	Conc (ppmv) ^b	Maximum Year LFG fugitive flow		2006 LFG Fugitive Flow	
					lb/hr	ton/yr	lb/hr	ton/yr
1,1,1 - Trichloroethane (methyl chloroform)	x	71-55-6	133.42	0.168	0.00183	0.008453	0.00049213	0.00215552
1,1,2,2 - Tetrachloroethane	x	79-34-5	167.85	0.005	7.23E-05	0.000316	1.8426E-05	8.0707E-05
1,1,2 - Trichloroethane (1,1,2 TCA)*	x	79-00-5	133.41	0.10	0.001149	0.005031	0.00028291	0.00128295
1,1 - Dichloroethane (ethyldene dichloride)	x	75-34-3	98.95	0.741	0.006313	0.02765	0.00160984	0.00705109
1,1 - Dichloroethene (vinylidene chloride)	x	75-35-4	96.94	0.092	0.000768	0.003363	0.00019581	0.00085766
1,2 - Dichloroethane (ethylene dichloride)	x	107-06-2	98.96	0.120	0.001022	0.004478	0.00026073	0.00114199
1,2 - Dichloropropane (propylene dichloride)	x	78-87-5	112.98	0.023	0.000224	0.00098	5.7053E-05	0.00024989
2-Propanol (isopropyl alcohol)		67-63-0	60.11	7.908	0.040926	0.179255	0.01043666	0.04571256
Acetone		67-64-1	58.08	7.075	0.035378	0.154957	0.00902196	0.0395162
Acrylonitrile	x	107-13-1	53.06	0.036	0.000164	0.00072	4.1939E-05	0.00018369
Benzene	x	71-43-2	78.11	0.972	0.006537	0.028631	0.00166694	0.00730121
Bromodichloromethane		75-27-4	163.83	0.264	0.003724	0.01631	0.00094961	0.00415929
Butane		106-97-8	58.12	5.030	0.02517	0.110243	0.00641862	0.02811355
Carbon Disulfide	x	75-15-0	76.13	0.221	0.001449	0.006345	0.0003694	0.00161797
Carbon Tetrachloride	x	56-23-5	153.84	0.007	9.27E-05	0.000406	2.3644E-05	0.00010356
Carbonyl Sulfide	x	463-58-1	60.07	0.183	0.000946	0.004145	0.00024136	0.00105714
Chlorobenzene	x	108-90-7	112.56	0.227	0.0022	0.009635	0.00056089	0.00245715
Chlorodifluoromethane		124-48-1	86.47	0.355	0.002643	0.011576	0.00067397	0.002952
Chloroethane (ethyl chloride)	x	75-00-3	64.52	0.448	0.002489	0.0109	0.00063463	0.00277968
Chloroform	x	67-66-3	119.39	0.010	0.000103	0.00045	2.6213E-05	0.00011481
Chloromethane	x	74-87-3	50.49	0.136	0.000591	0.002589	0.00015076	0.00066034
Dichlorobenzene	x	106-46-7	147.00	1.448	0.018326	0.080268	0.00467341	0.02046954
Dichlorodifluoromethane		75-71-8	120.91	0.964	0.010035	0.043954	0.0025591	0.01120886
Dichlorofluoromethane		75-43-4	102.92	2.620	0.023216	0.101686	0.00592037	0.02593124
Dichloromethane (methylene chloride)	x	75-09-2	84.94	3.395	0.024828	0.108745	0.0063314	0.02773155
Dimethyl Sulfide (methyl sulfide)		75-18-3	62.13	6.809	0.036422	0.15953	0.00928823	0.04068243
Ethane		74-84-0	30.07	7.943	0.020564	0.090069	0.00524404	0.02296689
Ethanol		64-17-5	46.08	64.425	0.255594	1.119502	0.06518009	0.28548879
Ethyl Mercaptan (ethanethiol)		75-08-1	62.13	0.226	0.001209	0.005295	0.00030829	0.00135031
Ethylbenzene	x	100-41-4	106.16	6.789	0.062051	0.271785	0.01582395	0.06930888
Ethylene dibromide	x	106-93-4	187.88	0.005	8.09E-05	0.000354	2.0625E-05	9.0338E-05
Fluorotrichloromethane		75-69-4	137.38	0.327	0.003858	0.016941	0.00098632	0.0043201
Hexane	x	110-54-3	86.18	2.063	0.015307	0.067045	0.0039035	0.01709731
Hydrogen Sulfide		7783-06-4	34.08	23.578	0.069182	0.303015	0.01764228	0.07727317
Mercury (total)	x	7439-97-6	200.61	2.92E-04	5.04E-06	2.21E-05	1.2861E-06	5.6332E-06
Methyl Ethyl Ketone	x	78-93-3	72.11	12.694	0.078809	0.345185	0.0200975	0.08802705
Methyl Isobutyl Ketone	x	108-10-1	100.16	0.750	0.006468	0.028328	0.00164932	0.007224
Methyl Mercaptan		74-93-1	48.11	1.266	0.005244	0.022968	0.00133726	0.00585722
Pentane		109-66-0	72.15	3.290	0.020437	0.089514	0.00521171	0.02282729
Perchloroethylene (tetrachloroethylene)	x	127-18-4	165.83	1.193	0.017033	0.074604	0.00434362	0.01902505
Propane		74-98-6	44.09	19.858	0.075381	0.330167	0.01922311	0.08419722
1,1,2 - Dichloroethene (1,2 dichloroethylene)		156-60-5	96.94	0.051	0.000426	0.001864	0.00010855	0.00047544
Toluene	x	108-88-3	92.13	25.405	0.201514	0.882629	0.05138878	0.22508286
Trichloroethylene (trichloroethene)	x	79-01-6	131.38	0.681	0.007703	0.033739	0.00196438	0.00860396

Fugitive Dust Emissions
Emissions Summary
Anderson Landfill, Anderson, CA

Emissions Summary

Emission Unit	Description	PM _{2.5}		PM ₁₀		PM ₃₀ (TSP)	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Paved Emissions	0.36	0.47	2.39	3.11	12.25	15.93	
Unpaved Emissions	3.45	4.48	34.50	44.85	127.78	166.12	
Soil Handling/Piles	0.00	0.00	0.00	0.00	0.00	0.00	
Total	3.81	4.95	36.89	47.95	140.04	182.05	

Input Parameters
Anderson Landfill
Anderson, CA

Input Parameters

Paved Road Length (one way) ^a	0.2 mi
Unpaved Road Length (one way) ^a	1.5 mi
Amount of Material Handled Per Day ^b	104 ton/day
No. of Hours of Operation Per Day ^a	10 hr/day
No. of Days in Averaging Period ^b	260 day
No. of Hours of Operation Per Averaging Period	2600 hr/avg per
Mean Wind Speed, W ^b	7 mph
No. of "Wet" Days (i.e., at least 0.01 in. precip) ^c	90 day
Silt Loading, sL ^a	7.4 g/m ²
Surface Material Silt Content, s ^a	6.4 %
Surface Material Moisture Content, M ^a	14.2 %
Control Efficiency - Low End of Range	50 %
Control Efficiency - High End of Range	50 %
Control Efficiency - Average	50% %

Topsoil/Daily Cover

54288 yd³/yr
 1000 lbs/yd³
 27144 tons/yr

^aSite Specific

^bObtained from the Western Regional Climate Center, see attached Data Sheet.

^cRefer to *precip* (separate file) for site specific information.

Note: Examples of controls are vacuum sweeping, water flushing, and broom sweeping and flushing. Control efficiency typically ranges from 50 percent to 80 percent, depending on the type of method used, frequency of application, and physical extent to which it is applied.

Sources: U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42") 5th Ed., November 2006, Section 13.2.2; SCAQMD, *CEQA Document*, Table A-11-9A.

Calculation of Mean Vehicle Weight

Vehicle Type	Vehicle Weight ^a		Average (ton)	# of Vehicles Day
	Unloaded (ton)	Loaded (ton)		
Transfer Trailer	17	37	27	15
Front Loader	20	26	23.0	14
Rear Loader	20	34	27.0	1
Roll Off	16	20	18.0	5
Dump Truck	14	40	27.0	100
Total Vehicle Count			135	per day
Mean Vehicle Weight			26.3	ton

^aEstimated

35100 4900
 18.846

Unpaved Emission Calculations
Anderson Landfill
Anderson, CA

Unpaved Road Equation and Calculated Emission Factors

Category, Variable	Value	Range ^a
Surface Material Silt Content, s	6.4	% 2.2-21
Mean Vehicle Weight, W	26.3	ton
No. of Days in Averaging Period	260	day 1-365
No. of "Wet" Days (i.e., at least 0.01 in. precip)	90	1-365
Particle Size Multiplier - PM _{2.5} , k	0.15	
Particle Size Multiplier - PM ₁₀ , k	1.50	
Particle Size Multiplier ^b - PM ₃₀ , k	4.90	
Empirical Constant - PM _{2.5} , a	0.90	
Empirical Constant - PM ₁₀ , a	0.90	
Empirical Constant ^b - PM ₃₀ , a	0.70	
Empirical Constant - PM _{2.5} , b	0.45	
Empirical Constant - PM ₁₀ , b	0.45	
Empirical Constant ^b - PM ₃₀ , b	0.45	
Calculated Emission Factor - PM _{2.5} , E	0.17	lb/VMT
Calculated Emission Factor - PM ₁₀ , E	1.70	lb/VMT
Calculated Emission Factor - PM ₃₀ , E	6.31	lb/VMT

^aThe range is specific for MSW landfills from AP-42 Table I3.2.2-1

^bPM₃₀ is sometimes termed "suspensable particulate" (SP) and is often used as a surrogate for "total suspended particulate" (TSP).

Note 1: The multiplier k includes unit conversions to produce emission factors in the units shown for the indicated size range from the mixed units required in the equation.

Note 2: The unpaved road equation listed in AP-42 contains an emission factor "C." This factor reduces projected emissions by taking into account 1980's vehicle fleet exhaust and brake wear and tear. This spreadsheet model deliberately leaves out this factor because it applies to *publicly-accessed* roads which landfill roads are not.

Source: U.S. EPA., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources ("AP-42") 5th Ed.*, November 2006. Section I3.2.2.

Calculated PM Emissions from Unpaved Road(s)

Category	Value	Equivalent
Unpaved Road Length (one way)	1.5	mi
No. of Hours of Operation Per Day	10	hr/day
No. of Hours of Operation Per Averaging Period	2,600	hr/avg per
Vehicle Count Per Day	135	per day
Vehicle Miles Traveled Per Day	405	miles
Vehicle Miles Traveled Per Year	105,300	miles
Control Efficiency	50%	
Calculated Emissions - PM _{2.5}	3.45	lb/hr
Calculated Emissions - PM ₁₀	34.5	lb/hr
Calculated Emissions - PM ₃₀	127.8	lb/hr
		4.48 ton/yr
		44.85 ton/yr
		166.12 ton/yr

Paved Emission Calculations
 Anderson Landfill
 Anderson, CA

Paved Road Equation and Calculated Emission Factors

Category, Variable	Value	Range ^a
Silt Loading, sL	7.4 g/m ²	1.1-32
Mean Vehicle Weight, W	26.3 ton	
No. of Days in Averaging Period	260 day	
No. of "Wet" Days (i.e., at least 0.01 in. precip)	90	
Particle Size Multiplier - PM _{2.5} , k	0.0024 lb/VMT	
Particle Size Multiplier - PM ₁₀ , k	0.016 lb/VMT	
Particle Size Multiplier ^b - PM ₃₀ , k	0.082 lb/VMT	
Calculated Emission Factor - PM _{2.5} , E	0.133 lb/VMT	
Calculated Emission Factor - PM ₁₀ , E	0.886 lb/VMT	
Calculated Emission Factor - PM ₃₀ , E	4.538 lb/VMT	

^aThe range is specific for MSW landfills from AP-42 Table 13.2.1-4

^bPM₃₀ is sometimes termed "suspension particulate" (SP) and is often used as a surrogate for "total suspended particulate" (TSP).

Note 1: The multiplier k includes unit conversions to produce emission factors in the units shown for the indicated size range from the mixed units required in the equation.

Note 2: The paved road equation listed in AP-42 contains an emission factor "C." This factor reduces projected emissions by taking into account 1980's vehicle fleet exhaust and brake wear and tear. This spreadsheet model deliberately leaves out this factor because it is based on tests done on freely-flowing vehicles, not "stop-and-go" traffic (as is the case with most "landfill" traffic).

Source: U.S. EPA, *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources* ("AP-42")
 5th Ed., November 2006, Section 13.2.1

Calculated PM Emissions from Paved Road(s)

Category	Value	Equivalent
Paved Road Length (one way)	0.2 mi	
No. of Hours of Operation Per Day	10 hr/day	
No. of Hours of Operation Per Averaging Period	2,600 hr/avg per	
Vehicle Count Per Day	135 per day	
Vehicle Miles Traveled Per Day	54 miles	
Vehicle Miles Traveled Per Year	14,040 miles	
Control Efficiency	50%	
Calculated Emissions - PM _{2.5}	0.36 lb/hr	0.47 ton/yr
Calculated Emissions - PM ₁₀	2.39 lb/hr	3.11 ton/yr
Calculated Emissions - PM ₃₀	12.3 lb/hr	15.93 ton/yr

Soil Handling & Piles
Anderson Landfill
Anderson, CA

**Variables Required by Soil Handling and Storage Pile(s) Equation
and Calculated Emission Factors**

Category, Variable	Value	Range ^a
Mean Wind Speed, U	7.0	mph
Surface Material Moisture Content, M	14.2	%
No. of Days in Averaging Period	260	day
Particle Size Multiplier - PM _{2.5} , k	0.11	
Particle Size Multiplier - PM ₁₀ , k	0.35	
Particle Size Multiplier ^b - PM ₃₀ , k	0.74	
Calculated Emission Factor - PM _{2.5} , E	3.51E-05	lb/ton
Calculated Emission Factor - PM ₁₀ , E	0.00011	lb/ton
Calculated Emission Factor - PM ₃₀ , E	0.00024	lb/ton

^aThe range is specific for MSW landfills and represents sand, slag, cover, a clay/dirt mix, clay, fly ash, and misc. fill materials.

^bPM₃₀ is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for "total suspended particulate" ([TSP] per AP-42).

Note: The emission factor equation is valid for the following ranges: silt content (0.44-0.19%), moisture content (0.25-4.8%), and wind speed (1.3-15 mph). The confidence factor decreases if any value (used) is beyond these ranges.

Source: U.S. E.P.A., *Compilation of Air Pollutant Emission Factors, Volume I. Stationary Point and Area Sources ("AP-42")*, 5th Ed., January 1995, Section 13.2.4

Calculated PM Emissions from Soil Handling and Storage Pile(s)

Category	Value	Equivalent
Amount of Material Handled Per Day	104	ton/day
No. of Hours of Operation Per Day	10	hr/day
No. of Hours of Operation Per Averaging Period	2,600	hr/avg per
Calculated Emissions - PM _{2.5}	0.00037	lb/hr
Calculated Emissions - PM ₁₀	0.0012	lb/hr
Calculated Emissions - PM ₃₀	0.0025	lb/hr
		0.00048 ton/yr
		0.0015 ton/yr
		0.0032 ton/yr

Letter Symbols
Anderson Landfill
Anderson, CA

Letter Symbol	Definition
E	emission factor (lb/VMT or g/VMT)
g/m ²	grams per meter squared
g/VMT	grams per vehicle mile travelled
hr	hour
lb/hr	pound per hour
lb/VMT	pounds per vehicle mile travelled
mi	mile (or VMT)
mph	miles per hour
PM _x	particulate matter less than or equal to "x" microns
sL	silt loading
ton/yr	ton per year
W	mean vehicle weight
s	surface material silt content
S	mean vehicle speed
TSP	total suspended particulate
M	surface moisture content
U	mean wind speed

**Sample Calculations
Landfill
Town, State**

Sample Calculations

PM_x Emissions

Paved Roads

$$E_x = k * \{sL/2\}^{0.65} * \{W/3\}^{1.5}$$

(particle size multiplier)*(road sfc silt loading)*(mean vehicle weight)*{(1-no. of "wet" days)/(4*days in avg. per.)} = lb/VI
{(lb/VMT*paved road length*vehicle count per day*days in avg per)/hr in avg per}*(1-control efficiency) = lb/hr

Unpaved Roads

$$E_x = (k * (s/12)^a * (W/3)^b) * (365-p/365)$$

((particle size multiplier)*(sfc material silt content)*(mean vehicle weight)/)*(365-no. "wet" days/365) = lb/VMT
{(lb/VMT*(unpaved road length[round trip]*vehicle count per day*days in avg per/hr in avg per)))*(1-control efficiency) = lb

Aggregate Handling and Storage Piles

$$E_x = k * (0.0032) * \{[(U/5)^{1.3}] * [(M/2)^{1.4}]\}$$

(particle size multiplier)*(constant)*{(mean wind speed)/(material moisture content)} = lb/ton
(lb/ton*amt of material handled per day)/hr per day = lb/hr

GHG Tailoring Rule Calculator

Instructions: Find your Flare or Engine's Maximum Throughput (in scfm) using the same documentation you used to determine throughput for non-GHG emissions calculations. Some examples of common capacities are included on the second tab (GHG PTE). On that tab, the Total Potential Emissions columns have calculated the annual potential tons of greenhouse gases generated for the sample type and size of destruction device. Please note that this table does not include all sizes of devices, but can be used for all devices by simply inserting the maximum throughput for your device in space B8 of tab 2 (GHG PPTE). Again, please check your permit conditions, manufacturer's specifications and any permit modifications to ensure that proper maximum throughput is used in the GHG PTE calculation.

Assumptions: LFG = 50% CH4 and 50% CO2
*when calculating potential to emit for criteria pollutants, 50 % CH4 and 50 % CO2 are typically used, therefore use these numbers when calculating GHG emissions unless criteria pollutants were calculated on a different basis

Heating value of LFG = 506 BTU/scf
*Pure methane has a heating value of 1012 BTU/scf and the model assumes that Landfill gas is 50% methane, therefore a heating value of 506 BTU/scf for landfill gas. This will need to be adjusted if use a different percent methane content than 50%.

Devices are run for 8760 hours/year
*One year contains 8760 hours, therefore assume the device will run full time. If you are taking a voluntary limit on operating hours, limiting yourself to less than full time operation, enter the number of hours you will limit operations to for one year. This is a rare occurrence and must be Air Director approved.
Global Warming Potential CH4 = 21
Global Warming Potential N2O = 310
*Global Warming Potential Taken from TABLE A-1 to Subpart A of Part 98-Global Warming Potentials
40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

Emission factors: CO2 = 52.07 kg /MMBTU
*Taken from TABLE C-1 to Subpart C of Part 98 -Default CO2 Emission Factors and High Heat Values for Various Types of Fuel,
40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

CH4 = 3.20E-03 kg/MMBTU
N2O = 6.30E-04 kg/MMBTU
*Taken from TABLE C-2 to Subpart C of Part 98 - Default CH4 and N2O Emission Factors for Various Types of Fuel,
40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

Calculations: Annual throughput (mmscf) = Unit rated throughput (scfm) X 60 min./hour X 24 hr./day X 365 days/year X 0.000001

Annual Methane and CO2 generation (mmscf) = annual throughput (mmscf) x 0.50 (50 %)

Heat Rate (MMBTU/hr) = Unit rated throughput (scfm) X 60 min/hr. X 506 BTU/scf (heating value of LFG) X 0.000001

Total CO2 = metric tons of CO2 generated by combustion of LFG plus passthrough metric tons of CO2
metric tons of CO2 due to combustion = heat rate (MMBTU/hr) X 8760 hr/year X emission factor CO2 (52.07) x 0.001

passthrough metric tons = CO2 generation (mmscf) X 1,000,000 scf/1mmscf X 1 m3/35.31 scf X 1000 L/1 m3
X 1 mole gas/23.689 L X 44.01 gm/1 mole CO2 X 1.00 E-6 metric tons/ 1gm.

Total N2O (metric tons CO2 eq.) = heat rate (MMBTU/hr) X 8760 hr/year X emission factor N2O (6.30E-04 kg/MMBTU) x 0.001 X 310 GWP

Total CH4 (metric tons CO2 eq.) = heat rate (MMBTU/hr) X 8760 hr/year X emission factor CH4 (3.20E-03 kg/MMBTU) x 0.001 X 21 GWP

Total metric tons (CO2 and CO2 eq.) = Total CO2 + N2O metric tons CO2 eq. + CH4 metric tons CO2 eq. X 1.1023

Conversion Factors:

1 gram	=	1.000E-06 metric tons
1 mmscf	=	1000000 scf
1 mol CO2	=	44.01 g
1 m3	=	35.31 scf
1 m3	=	1000 L
1 mol gas	=	23.69 L

* 23.689 is molar volume of gas at standard pressure of 1 atmosphere at 60 degrees Farenheit

pressure = 1 atmosphere as published in the Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air and the Compendium of Method for the Determination of Toxic Organic Compounds In Ambient Air.

temperature = 60 degrees Farenheit as cited in 40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

Insert methane concentration of landfill gas: ->leave blank if not known default is 50%
 Carbon dioxide concentration of landfill gas:

General Information

Combustion Source	Unit Rated Throughput (scfm)	Annual Potential	
		Methane Generation (mmscf)	CO2 Generation (mmscf)
Enclosed Flare	1500	788.40	394.20
Totals	1500	788.40	394.20

Potential Emissions

Combustion Source	Heat Rate (MMBTU/Hr)	Total CO2 (metric tons)	Total CO2 (short tons)	N2O (metric tons CO2 eq.)	N2O (short tons CO2 eq.)	CH4 (metric tons CO2 eq.)	CH4 (short tons CO2 eq.)	Total Potential Emissions CO2 eq.	Total Potential Emissions CO2 eq. short tons (U.S tons)
								metric tons (CO2+CO2 eq.)	
Enclosed Flare	45.540	41,513.01	45,759.79	77.91	85.88	26.81	29.55	41,617.73	45,875.23
Totals	45.540	41,513.01	45,759.79	77.91	85.88	26.81	29.55	41,617.73	45,875.23

Methane concentration of fg from last tab: 50%
 Carbon dioxide concentration from last tab: 50%

General Information

Unit Type	Unit Rated Throughput (scfm)	Annual Potential	
		Methane Generation (mmscf)	CO2 Generation (mmscf)
Enclosed Flare	1500	788.40	394.20
Totals	1500	788.40	394.20

Potential Biogenic Generation

Unit Type	Heat Rate (MMBTU/Hr)	Combustion CO2 (metric tons)	Combustion CO2 (short tons)	Passthrough CO2 (metric tons)		Total Biogenic CO2 (metric tons)	Total Biogenic CO2 (short tons)
				Passthrough CO2 (metric tons)	Passthrough CO2 (short tons)		
Enclosed Flare	45.540	20,772.31	22,897.31	20,740.71	22,862.48	41,513.01	45,759.79
Totals	45.540	20,772.31	22,897.31	20,740.71	22,862.48	41,513.01	45,759.79

Potential Anthropogenic Generation

Unit Type	N2O (metric tons)	N2O (short tons)	CH4 (metric tons)		N2O (metric tons CO2 eq.)	N2O (short tons CO2 eq.)	CH4 (metric tons CO2 eq.)	CH4 (short tons CO2 eq.)	Anthropogenic (metric tons CO2 eq.)	Total Anthropogenic (short tons CO2 eq.)
			CH4 (short tons)	CH4 (short tons)						
Enclosed Flare	0.25	0.28	1.28	1.41	77.91	85.88	26.81	29.55	104.72	115.43
Totals	0.25	0.28	1.28	1.41	77.91	85.88	26.81	29.55	104.72	115.43

Combined Biogenic and Anthropogenic Totals

Unit Type	Total CO2 eq. metric tons	Total CO2 eq. short tons
Enclosed Flare	41,617.73	45,875.23
Totals	41,617.73	45,875.23

Uncollected Methane Emissions

Amount of CH ₄ collected during Reporting Period (from D21 on ghg pte tab)	394.20 mmscf
LFG System Collection Efficiency	68.84%
Amount of Uncollected CH ₄	178.4412 mmscf
Amount of Uncollected CH ₄	3,421.80 metric tons/year
CH ₄ Oxidation Factor	10.00%
Uncollected CH ₄ Emitted through cover	160.5970 mmscf
Uncollected CH ₄ Emitted through cover	3,079.62 metric tons/year
	3,394.67 US tons per year

Uncollected CO₂ Emissions

Amount of CO ₂ collected during Reporting Period (from E21 on ghg pte tab)	394.20 mmscf
LFG System Collection Efficiency	75.00%
Uncollected CO ₂ Emitted through Cover	131.4 mmscf
Uncollected CO ₂ Emitted through Cover	6,913.57 metric tons/year
CH ₄ oxidized in cover	342.18 metric tons/year
CO ₂ emitted through cover from oxidized methane	941.00 metric tons/year
	7,620.83 US tons per year
	377.19 US tons per year
	1,037.26 US tons per year

Methane Emissions

Uncollected Emissions of CH ₄	3,079.62 metric ton/yr	3,394.67 US tons per year
	Metric tons CO₂ E/year	Short tons per year
Total Uncollected Methane Emissions from Landfill in CO₂e	64,672.08	71,288.04

Carbon Dioxide Emissions

Uncollected CO ₂ Emissions emitted through landfill cover	6,913.57 metric ton/yr	7,620.83 US tons per year
CO ₂ emitted through landfill cover from oxidized methane	941.00 metric ton/yr	1,037.26 US tons per year
	Metric tons CO₂/year	Short tons per year
Total Uncollected Carbon Dioxide Emissions from Landfill	7,854.56	8,658.09

CO₂e from Methane and CO₂ for total fugitive Total Fugitive In CO₂e 79,946.13 short tons per year

Total Site-wide Carbon Dioxide Emissions from Landfill	Short tons per year
	125,821.35

